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SELECTIONS FROM THE RECORDS
OF THE
FINANCIAL COMMISSIONER'S OFFICE, No. 33.

No. LXI.—CORRESPONDENCE RELATING TO THE FEROZEPUR AND FAZILKA INUNDATION CANALS.

Summary by Mr. E. B. Francis, Settlement Officer, Ferozepur.

FEROZEPORE INUNDATION CANALS.

From Deputy Commissioner, Ferozepur, to the Commissioner and Superintendent, Lahore Division, No. dated 2nd May 1874.

In May 1874, Captain Grey, Deputy Commissioner of Ferozepur, in a letter to the Commissioner of Lahore, first broached the subject of inundation canals. In the course of a recent tour in his district he had observed the facilities for such a system of irrigation which were afforded by a number of old channels, the beds of which had silted up. Influenced by the representations of the zamindars who complained that they had to pay sailaba rates on lands which the overflow of the Sutlej failed to reach owing to the silting up of these channels, he determined to lend his official aid to the people in their efforts to restore their lost water-supply.

Secretary, Financial Commissioner, to Secretary, Government, Punjab, No. 67, dated 4th January 1875, and No. 549S./2764 of 17th May 1875.

Secretary to Government, Punjab, to Secretary to Financial Commissioner, No. 1411 of 4th October 1875.

In November of the same year the Deputy Commissioner reported the completion of seven small canals, and the Financial Commissioner thereupon addressed Government to sanction the use of the water of the Sutlej for these irrigation works, and forwarded an opinion obtained from the Government Advocate on the question of the rights and obligations which would result from permission being accorded. Before passing orders on the reference, Government directed that the whole scheme should be inspected and reported upon by an officer of the Irrigation Department. After the submission of this report, from which it appeared that Captain Grey's projects were on the whole unobjectionable, Government accorded their sanction to the grant of the use of the Sutlej water, "on condition that no user would have a vested right therein, and that should Government at any time divert or otherwise employ the water no claim for compensation would be entertained."

Secretary to Financial Commissioner, to Secretary to Government, Punjab, No. 1196 of 2nd November 1875, paras. 3 and 4.

Secretary to Government, Punjab, to Secretary to Financial Commissioner, No. 726 of 8th June 1876, para. 1, and enclosure.

Meanwhile Captain Grey had been pressing on the work of excavation. A report prepared and submitted by Mr. Fanshawe, Assistant Commissioner, in August 1875, shows the progress which had been made in the work up to that date. In submitting this report to Government, the Financial Commissioner drew attention to two proposals contained therein: (1) that Government should take over the canals at once, compensating the people for the land which their channels occupied, and (2) that Government should acquire the canals on the expiration of the existing Settlement. These proposals were neither supported by the Financial Commissioner nor adopted by Government.

In 1877 the question of an establishment for the Ferozepur canal came forward. It was found impossible to burden the district staff any longer with the labor of superintendence. The Deputy Commissioner of Ferozepur proposed that the services of an Assistant Engineer should be obtained to carry on the management. After a lengthy correspondence on the subject Government called for an opinion from Major Grey. That officer, in December 1880, submitted

a memorandum in which he declared that the appointment of an Assistant Engineer would be unneccssary, believing that no more scientific knowledge which would be required for the management of the canals than might be found in a Civil officer of intelligence and activity acquainted with the district, and he recommended that Babu Maya Das, then Tahsildar of Lahore, should be appointed Extra Assistant Commissioner in charge of the canals, his salary and that of his staff being made a charge upon the canals. These proposals were forwarded to the Government of India in order to obtain sanction to the levy of a canal cess; but while sanctioning the charge the Government of India pointed out that the charge could not be called a cess, or enforced as such, so long as it was not levied under legislative sanction; and the Governor-General in Council was of the opinion that legislation in some form would be necessary in the case of Ferozepur and other canals if they could not be brought under Act VIII of 1873. Accordingly, the Punjab Government called for a report from the Financial Commissioner on the general question of water-rates of district canals. The matter is at present under consideration of the Financial Commissioner and Government.

Secretary to Government, Punjab, to Secretary, Financial Commissioner, No. 4 C. of 17th December 1880, with enclosure.

Proceedings Government Punjab, (R., A. and C.), No. 2 of March 1881.

Proceedings Government, Punjab, (R., A. and C.), No. 7 of May 1881.

The total cost of the canal establishment was fixed by Government at Rs. 9,400 per annum, and it was laid down that no increase could be made in the number or in the pay of the establishment without the previous assent of Government. It was estimated by Major Grey that a *bachh* of 0-2-6 per acre of the estimated irrigated area—*viz.*, 59,000 acres would amount to the above sum. An additional 2 pies for Patwaris' dues and 4 pies for Mirábs was added to the above average of *bachh*, making a total of 3 annas per acre.

The system of clearance adopted for the Ferozepur canals is that which is known as the dak system, which is described in Colonel Grey's District Canal Manual, 1885. A certain length of excavation proportioned to the area irrigated in the previous season is allotted to each irrigating village, and the village is required to perform this task either personally or through a contractor within a fixed period, in default of which they may, under the terms of the canal *wajib-ul-arz*, be charged a penal rate of 8 annas per 100 c. ft. In 1882, certain villagers petitioned against this system, but on the Deputy Commissioner's explanation Government decided that no change was required.

Commissioner of Lahore, to Secretary, Financial Commissioner, No. 271 of 16th September 1882, and enclosure.

Secretary, Financial Commissioner, Lahore, No 9110 of 4th December 1882.

Secretary, Financial Commissioner, to Secretary to Government, Punjab, No. 1263 of 4th December 1882.

Secretary, Government Punjab, to Secretary, Financial Commissioner, No. 31 of 2nd May 1883.

On the completion of the Sirhind Canal Navigation Channel, which cut across almost the entire irrigation length of the Ghazanfarwah and Shahrwah branches of the Barnswah, and most of the Karimwah rajbaha leading from that canal, the irrigators on the southern bank of this channel were deprived of their water. Under the terms on which the Sutlej water had been granted to the zamindars they were not entitled to compensation on account of this deprivation. It was at first proposed to supply them with water from the Sirhind canal on payment of the usual water-rates. Eventually, in 1883, a syphon passage was constructed by which the Ghazanfarwah and Shahrwah were passed together under the Navigation Channel. The cost of this work was advanced by the District and Municipal Committees, and is to be recovered by a water-rate on the irrigation affected.

List of Ferozepur District Canals.

No.	Name of Canal.	Length in miles, including main branches.	Bottom breadth at mouth.	Area irrigated in 1885.
1.	Aghawah	54	40	11,643
2.	Daulatwah	55½	40	6,389
3.	Bachherewah	79	50	17,841
4.	Barnswah (new)	47	40	12,310
5.	Mayawah	60½	40	13,405
6.	Butawah	16	17½	1,960
7.	Jalalwah	62	50	16,597
8.	Nizamwah	67	40	16,525
9.	Khanwah	31½	30	2,865
10.	Kutbwah	22	30	3,065
11.	Panjewah	30½	50	4,200
12.	Mobarikwah	30	35	6,964
13.	Fazilwah	26	50	1,5350
14.	Shaukatwah	19	30	2,323
				131,437

FAZILKA CANALS.

In 1882, Colonel Grey, C.S.I., then Commissioner of Hissar, recommended the introduction of canal irrigation into the Fázilka tahsil of the Sirsa district. In submitting the proposal to Government, Mr. Lyall, Financial Commissioner, suggested that the initial expenses connected with the construction of the heads of the canals should be borne by Government in consideration of the increase of revenue which, in a tract under fluctuating assessments, might reasonably be expected to result from the introduction of canal irrigation. Government announced their intention of deputing a Canal officer to examine the Hethár tract of Fázilka; but after some correspondence Colonel Grey was permitted to undertake himself the engineering of the proposed canals. He accordingly drew up two canal schemes. He proposed to irrigate the Hethar tract by utilizing an existing depression known as the Pádi nalla and converting it into a canal to be called the "Fázilwah." For this purpose he asked for a grant-in-aid of Rs. 2,000, as being Government's fair share of the cost of the head-works and distributaries of the canal. Colonel Grey's second project was to enlarge the small Mamdot canal, Baggewah, and carry it into the Fázilka Utár, giving to the canal thus extended the name of "Mubárakwah." This was a much more important work than the Fázilwah, and Colonel Grey proposed that Government should contribute, from the Reserve District Fund in its hands, Rs. 5,000 towards the cost of the canal. The "Fázilwah" project was supported by the Financial Commissioner, who, however, recommended delay in the case of the Mubárakwah. The Utar tract was under a light fixed assessment, and Colonel Grey had not proposed the imposition of any water-rate. The Financial Commissioner therefore deprecated a policy which would cause such an inequality in the conditions under which the irrigators in the Hethár and Utár tracts would receive canal water.

Secretary, Financial Commissioner, to Secretary Government, Punjab, No. 670–5096 of 7th July 1882.

Proceeding, Punjab Government, February 1883, No. 2.

In reply, Government suggested that a small and comparatively unimportant work like the Fázilwah had better be altogether a local one, and that if the District Board and the irrigators provided the whole cost and labour of construction, the resulting benefits should, subject to the payment to Government of a small seigniorage, be shared between the District Fund and the irrigating communities. A further report stating the conditions on which the villages had agreed to supply labour, the source from which funds were to be derived, and the system proposed for future management and control, was called for. A similar report was asked for in the case of the Mubárakwah. The information and proposals called for by Government

Proceedings Punjab Government, March 1883, No. 3.

are contained in four letters from Colonel Grey, to the Secretary to the Financial Commissioners, submitted to Government with No. 37 of June 12, 1883, from the Secretary to the Financial Commissioner to Government. The Fázilwah canal was being constructed by 65 villages with a grant-in-aid from the District Fund of Rs. 1,000. This grant was given out and out, and it was not proposed to levy any water-rate; but as during the continuance of the fluctuating system of assessment, Government would be an immediate gainer by the extension of irrigation, a contribution was asked for from Government of one and-a-half anna per acre irrigated towards the "*báchh*" which would be levied for the maintenance of the canal. The value of the canal, which was 26 miles long, was stated to be Rs. 5,072.

Proceedings Punjab Government July, 1884, No. 4.

With regard to the Mubárakwah, Colonel Grey stated (1) that the villages would undertake the work on the same conditions as those contained in the Ferozepur *wajib-ul-arz*; (2) that a sum of Rs. 1,000 would be provided by the Mamdot estate towards the cost of the canal in consideration of the improvement of the old Baggewah; (3) a grant-in-aid of Rs. 5,000 from the balance of the Reserve District Fund was applied for. Colonel Grey proposed that the system of management of both canals should be the same as in Ferozepur, the canals being placed under the special establishment sanctioned for that district, to which slight additions would be made in consequence of the extension of operations. These proposals were supported by the Financial Commissioner, and were considered by Government to be generally satisfactory. In view of the fact that the irrigators expected to be treated in as favourable a way as the villages in Ferozepur had been, the use of the water free of any payment for 20 years was conceded to them. At the same time the Lieutenant-Governor directed that in future in all cases a light royalty should be imposed in order to mark the rights of the Government over the water. Sanction was accorded to the application for a grant of Rs. 5,000 from the balance of the Reserve District Fund, it being left an open question whether this sum and the Rs. 1,000 already contributed by the District Committee of Sirsa to the construction of the Fázilwah should be out and out grants, or only loans. The proposed scheme of management of the canals was deemed appropriate, and was sanctioned, as was also the proposal that Government should contribute half the *báchh* of the Fázilwah canal up to a limit of 1½ annas per acre. To the villages in the Hethár Chak, which were assessed at fluctuation rates, the grant of canal water free of payment for a period of 20 years was by no means such a boon as it was to the Utár villages irrigating from the Mubárakwah and paying a light fixed assessment. His Honor was of the opinions that the inequality had not been sufficiently discussed, and he asked for the opinions of the Financial Commissioner and Commissioner on the subject. The Government letter conveyed suggestions for remedying the inequality by levying only half fluctuating rates, for a period, on Hethár lands taking canal water, and it was intimated that it might be found possible to abandon fluctuating assessments as soon as canal irrigation became perfectly assured in the tract. Finally, sanction was given to the work of the Mubárakwah being put in hand.

This was afterwards modified, "the term of settlement" being substituted, *vide* Punjab Government's No. 5805, dated 2nd August 1884.

The Financial Commissioner invited the opinions of Colonel Wace, Commissioner of Settlements, Colonel Grey, and Mr. Wilson, Settlement Officer of Sirsa, on the questions referred by Government. The memoranda submitted by these officers in compliance with the Financial Commissioner's request deal generally with—

Proceedings Punjab Government, July 1883, No. 1.

(1) the system of assessment to be introduced or continued in the lands now first rendered irrigable;

(2) the protection from increased taxation to be given to the irrigators;

(3) the benefit to be derived by Government from the construction of these new canals and the appropriation of the water of the Sutlej.

These memoranda were forwarded to Government with the Financial Commissioner's No. 7 C., dated 24th April 1884. The Government orders on the subject are contained in their No. 24, dated 7th July 1884, with which letter the whole of the correspondence was printed. On some of the points

(Proceedings of Punjab Government, Revenue and Agriculture Department, Irrigation No. 1 of July 1884.

of reference there was a considerable difference of opinion between Colonel Grey on the one hand and Colonel Wace and Mr. Wilson on the other. The latter were inclined to the opinion that Colonel Grey's proposed treatment of the irrigators was too favourable and inconsistent with a due regard for the just and reasonable demands of the State. It will be sufficient to state the final orders of Government which, with regard to the Mubárakwah and Fázilwah canals, determine and define for the term of the existing Settlement the relations of the State, the villages and the Nawab of Mamdot. A formal agreement executed between the Nawab of Mamdot and the other irrigators of the Mubárakwah canal was approved. The sum of Rs. 5,000 advanced by the District Committee towards the cost of construction of the Mubárakwah, was to be considered a loan, and to be repaid from the proceeds of a low water-rate to be levied for a period of five years. *Pattahs* were to be granted to the irrigating villages in Fazilka, specifying that Government had waived its rights to levy water-rates for the period of Settlement, and that after the expiry of that period Government would demand such water-rates as it might see fit. Government accepted the Financial Commissioner's conclusion that nothing could be done to remove the inequality between the gross payments to be made by the inhabitants of the Hethár and Utár tracts. The fluctuating assessments in the Hethár tract were to be maintained for at least three or four years, when, if the *raison d'être* for fluctuating assessments were removed, a fixed assessment on existing assets might be substituted. Meanwhile the Hethar villages were to pay half the fluctuating assessment on canal lands which were waste or unirrigated at the recent Settlement for a period of ten years, after which period the full rates would be paid. The full rates of assessment were to be for *chural*, *masar*, and *methra* 12 annas, other crops Re. 1-4, per acre. In his No. 363, dated 15th October 1884, to the address of the Commissioner, the Deputy Commissioner of Sirsa reported that the above orders of Government were being carried out. A form of *pattah* was submitted at the same time, but not being considered suitable, a corrected form was drawn up under the orders of the Financial Commissioner, and was forwarded to the Commissioner with Financial Commissioner's No. 852, dated 4th February 1885.

SUMMARY.

No. 99, dated 27th March 1884, from Deputy Commissioner of Sirsa, to Commissioner, Hissar, forwarded to Financial Commissioner with No. 101 A., dated 10th April 1884, from Commissioner, Hissar, to Financial Commissioner.

Proceedings, Punjab Government, No. 1 of July 1884.

The *Fázilwah* was commenced on the 16th of March and opened on the 23rd of June 1883, and irrigated 8,237 acres during that year. The original cost of the work done on the canal was Rs. 5,571, of which sum Rs. 1,000 was granted by the District Committee of Sirsa, the rest representing the value of the the labour of the irrigating villages. During January and February 1884 the canal was remodelled and enlarged, and branches constructed at a cost of Rs. 5,721-15-7. Thus the total cost of the canal up to March 31st, 1884, was Rs. 11,292-15-7. Its irrigating capacity is 20,000 acres. The head of the canal is in mauza Khubazeh in Mamdot, and with branches it has a total length of 52 miles. It is managed by the Ferozepur canal establishment; and as in the case of canal irrigated lands in Ferozepur a *báchh* is levied on the lands of the irrigators towards the cost of this establishment; but of this *báchh* Government contributes one-half up to a limit of 1½ annas per acre. The lands irrigated being subject to fluctuating assessments, and having been considerably improved by the canal irrigation, were liable to be assessed at enhanced rates; but Government have as a favor directed that for a period of ten years canal lands, waste and unirrigated at Settlement, shall only pay half canal rates, full rates being 12 annas per acre for masar, chural and methra, and Re. 1-4 per acre for other crops. The villages have been granted protective pattas providing that no water rate will be claimed for the canal water during the continuance of the existing Settlement. If after three or four years (from July 1884) the existence of the canal has removed the necessity for fluctuating assessments in the Hethar tract, Government will be prepared to

Deputy Commissioner of Sirsa's No. 99, dated 27th March 1884.

consider proposals for the substitution of a fixed assessment on existing assets. The *Mubárakwah* was completed in February 1884, at a total cost of Rs. 27,682-11-6, of which sum of Rs. 5,000 was advanced from the reserve balance of the District Fund, and will be recovered by a water-rate within five years (from July 1884). The Mamdot estate contributed Rs. 1,000 as their share of the cost, and the remainder represents the value of the labour of the Fázilka villages which excavated the canal. For the first ten miles of its course it takes up the Baggewah canal. Thence the alignment has been carried across the lower "danda" into the Utár Chak of Fázilka, which it cuts diagonally, terminating almost at the foot of the upper "danda" near the Bahawalpur boundary. The irrigating capacity of the canal is stated to be 20,000 acres; but in 1885 only about 8,000 received water. Except the *báchh* which is levied on the canal lands as a contribution to the Ferozepur canal establishment, and the low water-rate levied for the repayment of the Rs. 5,000 advanced by the District Fund, the irrigators of this canal pay nothing for their water, and pattas have been granted to them securing this exemptiom from water-rates for the period of the existing Settlement. An agreement has been executed between the Nawab of Mamdot and the irrigators of the Fazilka tahsil concerning their joint use of the water of the Mubárakwah canal.

Enclosure A of No. 313, dated 5th December 1883, from Commissioner, Hissar, to Financial Commissioner.

SHAUKATWAH.

The following short statement of the history of the Shaukatwah canal was furnished by Babu Mya Das, Extra Assistant Commissioner, and submitted to Government with No. 363, dated 15th October 1884, from Deputy Commissioner of Sirsa, to Commissioner, Hissar.

Proceedings Punjab Government, No. 3 of March 1885.

Shaukatwah is the third canal of the Fázilka tahsil of the Sirsa district. The first two canals, constructed under the directions of Colonel Grey, irrigates as follows:—Fázilwah irrigates the Hethár Chaks, and Mubárakwah irrigates not more than half the Utar Chaks of the Fázilka tahsil; as to the remaining Utár Chaks, Colonel Grey, C.S.I., asked the people who generally possess *banjar* land, whether they would make another canal for their dry chaks. They said they were not able to do so, but that if the Nawab of Mamdot would extend his canal Panjewah on to their chaks at his own cost and charge a fair water-rate, they would be glad to pay, and accordingly an arrangement has been recorded between the said *abnoshes* and the Nawab of Mamdot, and a deed was registered on June 28th, 1884, at Fazilka, as follows:—(1). That the Nawab was to make the canal entirely at his own cost. (2) The Nawab may charge Re. 1 for every irrigated acre to such *abnoshes* as hold land of his jagir through which the canal is to pass. (3) That Rs. 3 per acre be charged for all other lands that may be irrigated. (4) That the above two rates are for flow water, and that half these rates—*viz.*, annas 8 and Re. 1, respectively, will be charged for *jhalar* or lift. It may here be stated that for the first ten miles the Shaukatwah (*i. e.*, the new branch) passes through Nawab's own jagir, and the remaining eight miles through the joint jagir, and that only one chak, named Táliwala in the Fázilka tahsil, is not a part of the Nawab's jagir. Under the above arrangements the Shaukatwah has been designed as follows:—The Panjewah canal (*vide* Mr. Fanshawe's printed report of 1874-5, page 41) has been widened and deepened down to its 12th mile at a cost of Rs. 8,674, and at this point its old branch, namely Khánwah, is led out from the right bank. From the left bank of the Panjewah the new branch—*i. e.*, the Shaukatwah is to be led off. The cost of this new excavation, a portion of which has already been done in the Ferozepur district, is to be Rs. 9,192, plus Rs. 4,019 for embankments. Thus the Shaukatwah will altogether cost the Nawab Rs. 21,855.

The above statement was submitted in accordance with paragraph 9 of Punjab Government No. 24, dated 7th July 1884-85. Colonel Wace, Financial Commissioner, visited Fazilka, and in conjunction with the agent of the Nawab

of Mamdot formulated the conditions on which the Nawab and the irrigating villages of the Shaukatwah were prepared to agree; and after a formal deed of agreement had been prepared by the Government Advocate the sanction of Government was given to the construction of the canal on these terms.

No. 10, dated the 2nd May 1874.

From—Captain L. J. H. GREY, Officiating Deputy Commisssoner, Ferozepur,
To—Lieut.-Colonel R. YOUNG, Commissioner and Superintendent, Lahore Division.

I HAVE the honor to report for your information that during my recent tour I have carefully inspected the riverside tracts in view to remedying the zamindars' grievance of having to pay sailaba rates for lands which the overflow has in great measure now failed to reach.

2. The tracts in question are seamed with channels issuing from, and horseshoes "chukurs" formed by, the river whose heads have silted up naturally, or which the zamindars themselves have choked by ignorant use of dams.

3. In all parts I found feeble attempts to set these flowing again by cuts from other channels and horseshoes still running; many of these, however, were unsuccessful from want of skill or power (there being no unity of action in the people without supervision); others have failed or deteriorated through mismanagement.

4. I have arranged to give the zamindars the benefits of official supervision and organization to secure the necessary application of power for their purposes, and of professional survey and the guidance of my experience (acquired in Dera Ghazi Khan, Dera Ismail Khan and Bahawalpur) to prevent the waste of that power through want of skill.

5. The zamindars with whom I have worked out all details are ready to try again under my guidance to recover their lost irrigation.

6. No expense will be entailed upon Government nor any rights created beyond that already existing in the river overflow, which is recognized in the imposition of sailaba rates.

7. The only new feature is that I shall direct and give unity to the zamindars' efforts, and shall save the misapplication and waste of their labor as hitherto by levelling and laying out their work at the cost of the District Fund. Also that I shall, after construction, supervise the irrigation from their works to prevent mismanagement and deterioration.

The *cher* statements are being prepared, the excavation work will shortly be levelled and laid out, and will then be allotted in accordance with those statements under the rules I had the honor of submitting to you. The various works will be commenced as soon as the zamindars have stored the harvest.

No. 241, dated the 24th November 1874.

From—Captain L. J. H. GREY, Officiating Deputy Commissioner, Ferozepur,
To—Lieut.-Colonel R. YOUNG, Commissioner and Superintendent, Lahore Division.

IN continuation of my letter of 2nd May last, I have the honor to report that the following irrigation cuts have been made by the zamindars of this district.

I must explain that these areas irrigated represent lands a considerable portion of which are ordinarily irigated at extreme flood. The cuts however irrigate even that portion two months earlier than it would otherwise receive water, and as it happened that this year the river did not rise to within a foot and-a-half of its ordinary flood, a great extent of even the portion mentioned would not have received water at all but for the cuts.

Name.	Length.	Height at Head.	Cost.	Area irrigated.	REMARKS.
			Rs.		
Rodawah	9 miles.	10 feet.	632	260 acres.	This cost is the estimated equivalent of the zamindar's labor expended on excavation and bunds at $2\frac{1}{2}$ annas the 100 cubic feet. The cheapness of all these schemes results from utilization of depressions. The difference in results represents the happiness or otherwise of my designs.
Teleewah	$2\frac{1}{2}$,,	10 ,,	350	346 ,,	
Nizamwah	$4\frac{1}{3}$,,	10 ,,	355	*351 ,,	*In this case a short cut into a deserted horseshoe, with a bund at the other end, gave these great results. The Shahrwah itself was merely led out from the horseshoe to the city to fill the tanks and water the gardens.
Shahrwah	$1\frac{1}{2}$,,	$6\frac{1}{2}$,,	301	*545 ,,	
Futtawah	$8\frac{2}{3}$,,	14 ,,	1,600	520 ,,	
Pungawah	$13\frac{1}{2}$,,	17 ,,	...	2,262 ,,	This and the next comprised extensive bunding works (of which there are no reliable data), without inclusion of which the estimate would be deceptive; even with them they are the cheapest works (for the results) that have been constructed.
Buggawah	$12\frac{1}{2}$,,	15 ,,	...	2,251 ,,	

Being a total of 52 miles of cuts which have irrigated during the past season 6,535 acres of land. I examined and projected them between 11th and end of April, and they were levelled, designed and completed between the latter date and the end of June, except the Futtawah, which was not opened till 25th July, and lost consequently several of the best floods. The success of these works is entirely *due to* the Tahsildars. These are Agha Mahomed of Zira, and Ghuzzanfur Ali of Moga. Buta Mull, the Tahsildar of Ferozepore, has since been promoted out of the district.

H. GREY,

Offg. Deputy Commissioner.

Memorandum on Inundation Canals in the Ferozepur District.

On assuming charge of Ferozepur on the 17th March 1874, I made a long tour, in the course of which I satisfied myself that the annual rainfall (really about 15 inches) while amply adequate, if seasonable, for the light soils south of the Dunda or old bank of the Sutlej, does not suffice for cultivation on the superior clayey soil of the strip (of some 15 miles average width) which intervenes between that and the present course of the river,

The zamindars, perceiving the necessity of artificial irrigation, have made since Settlement, in the *khádar* portion of tahsil Zira alone, 1,200 wells, representing an initial outlay of about 24 lakhs of rupees, besides a considerable annual expenditure on bullocks, gear and repairs, and irrigating only about 25,000 acres of land.

The area of this khadar tract is given in Mr. Brandreth's Settlement Report at 242,716 acres, but the measurement was made in 1852, and the river has moved considerably north-west since then.

There remains about 100,000 acres of *khádar* land in that tahsil, and vast tracts in Ferozepur and Mamdot which yield crops only in exceptional years, (the coming rabi will be the fourth consecutive harvest in which the barani cultivation in the *khádar* has failed) and whfch are assessed, consequently, at only from 4 annas to 8 annas an acre.

Mr. Brandreth, in his Settlement Report of 1852, makes the following remarks:—Para. III. " All these considerations however sink into insignificance when compared with the advantages that would result from introducing canal irrigation into the district."

Successive Deputy Commissioners have written in the same sense, but the Irrigation Department has always had too much on hand, and the " ensuing season" in which the irrigational capabilities of the district were to be examined has never yet arrived. I determined therefore to see what I could do. Mr. Barns, F.R.G.S., M.I.C.E., the Superintendent of Canals Irrigation, Bahawalpur State, being just about to proceed to England on sixteen months' leave, arranged, with Colonel Minchin's consent, to have certain projects which I had worked out, surveyed during the hot weather by members of his establishment, and to pass some time with me on his return, examining their work and designing the canals. Meanwhile to give the people some knowledge of the practice and advantage of irrigation, I obtained permission* to make some small works at once, whose results I reported last November. In September last I budgetted Rs. 15,000 for the purpose in the District Fund budget for 1875-76 (just received sanctioned), being approximately the amount of contributions to the fund of the zamindars of *khádar* strip of the district for three years during which they had received no benefit therefrom. In October Mr. Barns personally examined all the schemes and the surveys and designed the canals, making the remark, that never in his experience had he designed canals so cheap in proportion to the return to be expected from them (consequent on the immense saving effected by judicious utilization of existing depressions.)

* See my No. dated 2nd May, to Commissioner, Lahore, and his reply No. 79, dated 5th May, annexed.
See No. 241, dated November 1875, annexed.

In November I submitted the schemes to Mr. Egerton and the Commissioner, and they were entirely approved. On the 1st of January I commenced operations with money borrowed in anticipation of the District Fund grants, as January and February are the months in which the zamindars are free and labour cheap, and I am consequently doing the work at half and less than half the rates paid by the Canal Department.

The proposal was to do half the work with District Fund grants and half with taccavi grants which Mr. Egerton offered. Considerable difficulties have, however, come in the way of obtaining the latter. The taccavi rules prescribe 'professional approval' and security—one-fourth in excess of the amount borrowed—for all such grants.

It appears that Mr. Barns, not being a Government Engineer, other professional approval was required. Consequently I am awaiting the result of an application made at Colonel O'Connell's suggestion by the Commissioner for the services of a Canal officer to examine and sign the plans and estimates. The matter of security was easy in the case of the Nawab of Mamdot, a single

applicant for Rs. 10,000, but impossible to arrange in the ordinary way in the case of some hundred zamindars of each canal applicants for taccavi for the other canals. The total of the latter applications is Rs. 14,000.

I offered to be security myself, hypothecating policies of Life Insurance that I have, but the Commissioner pronounced that inadmissible. It is probable now that the Raja of Faridkot will stand security, or better still, advance the money. If not, the Nawab of Mamdot undertakes to stand security.

The statistics of the canals are given in the statement annexed, and they are marked out on the skeleton map accompanying.

My principle of working has been to leave nothing to rule of thumb. Before work commenced complete calculations were worked out for the canals of the entire contents of excavation peg by peg (of 330 feet each), with width and depth at each peg, and similarly for all bunds and embankments. The entire length of the canals was then laid out on the ground and all bunds set up in accordance therewith by myself, assisted by Mr Fanshawe, Assistant Commissioner. Clear working instructions and a system of accounts were supplied, and the Tahsildars were left to work each on his own method without interference, though Mr. Fanshawe and myself are constantly moving about supervising and explaining difficulties, and Mr. Barns forwards his instructions as required from time to time.

It is distinctly understood that the Nawab of Mamdot and the zamindars under these arrangements acquire no vested rights in the river water, and I have suggested in my No. 141 of 23rd November last before quoted that the sanction should reiterate this condition.

An arrangement has been recorded between the Nawab of Mamdot and the zamindars, where the canal does not pass through his own land, that the owners of land taken up by the canal shall receive water for their remaining lands free.

Elsewhere it is arranged by the Tahsildars and the zamindars of the villages concerned that land taken up by the canals shall be made good to the owners out of the common land of the villages. Money borrowed in excess of the District Fund grants, whether from Government or the Raja of Faridkot, will be repaid by an *atiana*.

It is not yet settled how the subsequent expense of maintenance of the canals—*viz.*, clearance or new heads, superintendence, &c., will be met. There are three methods under contemplation:—

1. Statute labor, assisted by District Fund grants where absolutely necessary.
2. A permanent low water-rate to form a fund for all expenses.
3. A yearly distribution of actual expenses incurred by *báchh* upon the villages concerned.

My own wish is that the Canal Department should assume executive charge of the canals as soon as they are running, distributing the water and performing all necessary works, but having nothing whatever to do with levying the *abiana* or collecting the labour, but merely indenting on the Deputy Commissioner for money or labor required. My experience of Mooltan and Derá Ghazi Khan leads me to believe this to be the best method in the interest of the people and of the Revenue and Canal Departments.

	Bottom breadth in feet.	Total length in miles.	Total cost in Rs.	State of Progress.	Remarks.
Tahsil Zira.					
1. Daulatwah ...	35	35	9,000. 5,000 from District Fund, 4,000 taccavi.	This canal is about three quarters finished. It was divided out in lengths to the villages interested. The cost of the cubic contents at 2 annas per 100 cubic feet being distributed through the lambardars. The people set to work heartily, and the work has been rapidly and admirably performed. The whole arrangements were made by, and the credit is due to, Agha Muhammad, the Tahsildar, and Imam-ud-din, Naib-Tahsildar.	At highest flood the discharge of this canal will be by one formula 500 cubic feet per second, by another 383 cubic feet. On an average discharge for six months it should irrigate about 10,000 acres of land.
2. Bucherawah ...	30	25	5,000. 2,000 from District Fund, 3,000 taccavi.	The remarks under this head are the same as for Daulatwah. The Tahsildar is ably assisted by Sodhi Uttam Singh, officiating Naib-Tahsildar, a Rais of the district and accepted candidate for a Naib-Tahsildarship.	At highest flood this canal will draw under one formula 300, and under the other 230 cubic feet per second, and on an average discharge for six months should irrigate about 6,000 acres of land.
Tahsil Ferozepur.					
1. Ferozewah ...	35	32	8,000. 5,000 from District Fund, 3,000 Ferozepur Municipality.	This canal is about one-third finished. The zamindar's portion is being done on the same system as in Zira. The extension to the city undertaken by the municipality is being done by contract. The entire arrngements have been made by, and the credit is due to, Maya Dass, officiating Tahsildar, assisted by Ilahi Bakhsh, Naib-Tahsildar.	The remarks are the same as for Daulatwah.
Tahsil Muktsar					
1. Nizamwah ...	40	40	20,000.	This canal was but recently commenced, the Nawab of Mamdot having a difficulty in finding funds. This is now progressing fairly and rapidly.	At highest flood this canal will discharge under one formula 480 cubic feet per second, and under another 360 cubic feet per second. On an average discharge for six months it should irrigate about 10,000 acres of land.
2. Bhungunwah ...	30	25	4,000. District Fund 2,000, taccavi 2,000.	Will be commenced immediately	Remarks as for Bucherawah.

No. 79—955, dated Lahore, 5th May 1874.

From—Lieut.-Colonel R. YOUNG, Commissioner and Superintendent, Lahore Division,

To—The Officiating Deputy Commissioner, Ferozepur.

Acknowledges his letter without number, dated 2nd current, reporting the proposed organization of villages for the restoration of river water to sailaba lands, and remarks that such work is eminently useful, and his proposals appear open to no objection.

2. It is as well, however, to point out, with reference to an expression in para. 6, that Government recognizes no rights in river water but its own; and that if it should draw off the river water or in any way cause a failure in the supply in the proposed channels, it is not responsible for the loss occasioned.

No. 67, dated 4th January 1875.

From—W. M. YOUNG, Esquire, Secretary to Financial Commissioner, Punjab,

To—The Secretary to Government, Punjab, (Irrigation Department).

IN continuation of this office No. 3022, dated 21st November, I am desired to submit, for the orders of Government a letter No. 315, dated 30th November, from the Commissioner, Lahore, forwarding proposals made by Captain Grey, Officiating Deputy Commissioner, of Ferozepur, for the excavation of certain inundation canals from the river Sutlej.

2. The object of this reference is to obtain the permission of Government to use the water of the Sutlej for the projects described.

3. The project of throwing water into the old bed of the Sutlej (Sukarnai) was entertained as early as 1856. The papers on the subject which are available in this office are herewith forwarded, in case a perusal of them should be desired. In 1860, the Director of Canals, in his letter No. 105, dated 22nd May, addressed to the Financial Commissioner, recommended that a cut should be opened, but nothing was done.

Commissioner, Lahore, No. 76, dated 6th April, and enclosures.

4. Captain Grey's experience in Bahawalpur has led him to pay attention to the subject, and he has taken measures to ensure a correct alignment of the canals he proposes to make.

5. During his tour through the Ferozepur district in November last, the Financial Commissioner had an opportunity of discussing the projects which are set forth in this reference in communication with Captain Grey and the Commissioner. The zamindars are willing to pay for excavating the canals. The first cost of the canals is so small that the construction will repay their outlay in a very short time. Current expenses will be met by a contribution from the lands irrigated. The plan resembles in many respects that which has been successful in the Shahpur district, with this difference, that in Ferozepur no advance from Government is applied for. If application were made for taccavi, the Financial Commissioner would recommend its being granted, but this is not at present necessary.

6. All that is sought for is permission to use the water of the Sutlej. Having confidence in the measures taken by Captain Grey to ascertain that his schemes are practicable, the Financial Commissioner recommends that this permission be accorded, on the understanding that Government will not give compensation for loss or diminution of the supply of water obtained under this permission should other works be hereafter constructed which will interfere with these canals.

No. 549—2764, dated 7th May 1875.

From—W. M. YOUNG, Esquire, Secretary to Financial Commissioner, Punjab,

To—The Secretary to Government, Punjab.

I AM desired to reply to your No. 601, dated 1st May, calling for an expression of the Financial Commissioner's opinion regarding permission to use the water of the Sutlej for certain irrigation works in the Ferozepur district proposed by Captain Grey, Officiating Deputy Commissioner.

Use of Sutlej river water in the Ferozepur district.

Proposed excavation of five canals.

2. Captain Grey's scheme embraces the excavation of five canals, *viz*:—

1. Daulatwah
2. Bachherewah
3. Ferozwah
4. Nizamwah
5. Bunganwah.

Taccavi advances likely to be required.

The Commissioner of Lahore, with a letter No. 315, dated 30th November 1874, forwarded a letter from Captain Grey detailing his proposals as regards the four first of these schemes. It was stated therein that perhaps taccavi or assistance from the District Fund might thereafter be asked for, but the immediate object of the reference was to secure permission for using the water of the Sutlej.

The proposal received Financial Commissioner's support.

3. The Financial Commissioner supported the application in a letter No. 67, dated 4th January 1875, addressed to the Secretary to Government, Irrigation Department. In that letter it was remarked that a project for throwing water into the old bed of the Sutlej (Sukarnai) was entertained as early as 1856, and a similar proposal was made by the Director of Canals in 1860, but no further measures were taken.

Correct alignment of the canals secured.

4. Captain Grey's experience in Bahawalpur has led him to pay attention to the subject, and he has taken measures to ensure a correct alignment of the canals he proposes to make.

First canal calculated to repay outlay soon.

5. During his tour through the Ferozepur district in November last the Financial Commissioner had an opportunity of discussing the projects which are set forth in this reference in communication with Captain Grey and the Commissioner Colonel Young. The first cost of the canals is so small that the construction will repay their outlay in a very short time. The plan resembles in many respects that which has been successful in the Shahpur district.

Advance of Rs. 10,000 for the Nizamwah canal.

6. For the excavation of the Nazimwah, which has been undertaken by the Nawab of Mamdot, Captain Grey has submitted an application for a taccavi advance of Rs. 10,000. This reference, which was forwarded with Commissioner's No. 49, dated 4th March, will be found among the enclosures to this letter.

Desirability of utilizing the Sutlej water.

7. *First*.—With regard to the enquiry made in your letter under reply—*viz*., whether the water of the Sutlej should be allowed to be utilized for the projects entertained by Captain Grey.

Government liable to pay compensation the only obstacle.

No. 1554, dated 6th May 1875.

8. On this point the Financial Commissioner has taken the opinion of the Government Advocate, which is forwarded in original. The only obstacle which could arise to interfere with such permission being granted would be the liability of Government to pay compensation in caae the water of the Sutlej were hereafter taken for other projects in such a manner as to throw any of the canals now contemplated out of use, or to cause diminution in the supply.

Mode of avoiding this.

9. Captain Grey has already anticipated such a probability and has given it to be distinctly understood by written orders and verbal explanations that the river water being the property of Government no user will give a vested right therein, nor, should the Government at any time divert or otherwise employ it, will any claim to compensation arise. He suggests also that the permission to construct these canals should be accompanied by a re-affirmation of the above principle.

Opinion of Government Advocate on this point.

10. The Government Advocate's opinion is to this effect, that under no circumstances could any claim to compensation arise if it be clearly stated at the time of granting the water that no such claims shall be entertained. In this opinion the Financial Commissioner concurs.

Sanction of Government recommended.

11. There appears, therefore, to be no reason for delaying sanction to the proposal for using the water of the Sutlej, provided the above condition be clearly observed; and the Financial Commissioner recommends that the permission should be accorded.

12. *Second.*—The application for an advance of Rs. 10,000 under the Land Improvement Act, to be made to the Nawab of Mamdot for the excavation of the Nizamwah, may be conveniently dealt with in this reference, as affecting one of the projects for which the Sutlej water is desired.

Taccavi advances of Rs. 10,000 to the Nawab of Mamdot.

13. Under Rule XVII the advance can be sanctioned by the Local Government. The plan, specification and estimate prescribed in Rule IV have been carefully prepared, and are herewith forwarded. The security is sufficient. The form of application is in due order, and will be found among the enclosures to Commissioner's No. 49, dated 4th March.

Advance permissible under the rules.

14. The Financial Commissioner recommends that the advance of Rs. 10,000 be granted to the Nawab, opportunity being taken at the time of explaining the condition regarding the use of the Sutlej water, which has been discussed above.

Advance recommended by Financial Commissioner.

15. The Financial Commissioner wishes that he could bestow nothing but commendation upon the energy displayed by Captain Grey in bringing his projects forward. But he finds from a separate reference from the Commissioner, Lahore, that a very considerable proportion of the excavation of the canals has been already completed in anticipation of Government sanction to the use of the Sutiej water. The Financial Commissioner hopes that the difficulties which Captain Grey might have brought upon himself and the people by his premature action may be averted by permission for the use of water being accorded at an early date, but he cannot consider this part of his procedure commendable.

Remarks on action taken by Captain Grey.

16. At the same time it appears to Mr. Egerton that the execution of these projects will confer a great benefit upon the people, and ultimately be a source of considerable revenue to Government; he therefore cordially recommends that the sanction of Government should be accorded to the proposals made in this letter.

Beneficial results anticipated from use of the canals.

17. The original enclosures of your letter under reply are herewith returned.

Opinion by H. M. Plowden, Esq., Offg. Government Advocate, dated 6th May 1875.

A project has been submitted to the Government regarding the construction of certain inundation canals from the river Sutlej in the Ferozepur district by zamindars and others

2. The project is submitted by the Deputy Commissioner on the basis that 'the river water being the property of Government, no user will give a vested right therein, nor, should the Government at any time divert or otherwise employ it, will any claim to compensation arise.' And permission is solicited by the Deputy Commissioner for the zamindars and others to use the water for the projects described by him.

3. The Financial Commissioner recommends that this permission be accorded, on the understanding that Government will not give compensation for loss or diminution of the water obtained under the permission should other works hereafter be constructed which will interfere with these canals.

4. My opinion is sought on the question of compensation.

5. It may be unhesitatingly affirmed, following the terms of the preamble to the North India Canal and Drainage Act of 1873, that in the Punjab the Government is entitled to use and control for public purposes the water of all rivers flowing in natural channels, and therefore of the river Sutlej, and that where no vested right exists in other persons (and it does not appear that there is any such in the case of the zamindars and other persons interested in the present projects) to use the water of the river for irrigation purposes, the right of Government is exclusive, and the permission of Government is necessary to legalise such user as is here contemplated.

6. If this be so, it is open to the Government to grant a license to use the water for irrigation upon such conditions as it may choose to annex to the grant; and if one of these conditions be that proposed by the Deputy Commis-

sioner of Ferozepur and supported by the Financial Commissioner, it seems hardly open to doubt that no claim hereafter advanced against the Government under clause 8 of Act VIII of 1873 could be successfully maintained in the face of express agreement to the contrary. Assuming for argument's sake, without conceding it, that under an unconditional grant, and in the absence of express agreement, the zamindars might become under some circumstances entitled to compensation under the Act quoted above, no such right can in my opinion arise if it be clearly stated at the time of granting the license that under no circumstances shall such claims be entertained.

No. 1411, dated Lahore, 4th October 1875.

From—C. L. TUPPER, Esq., Offg. Under-Secretary to Government, Punjab,
To—The Secretary to Financial Commissioner, Punjab.

In reply to your letters No. 549, dated 17th May last, and No. 588, dated 26th idem, regarding the use of the water of the Sutlej for certain irrigation works in the Ferozepur district, and an advance of Rs. 10,000 under the Land Improvement Act for the Nizamwah canal, I am directed to forward copy of letter No. 3839 I, dated 6th instant, from the Chief Engineer, Irrigation Branch, with enclosures in original, and to convey the following orders of His Honor the Lieutenant-Governor.

2. The proposal for using the water of the Sutlej, as recommended by the Financial Commissioner in paragraph 11 of the former of your two letters under reply, is sanctioned by His Honor, on condition that no user will have a vested right therein, and that should the Government at any time divert or otherwise employ the water no claim for compensation will be entertained. These conditions should be clearly explained to, and accepted by, those concerned.

3. With reference to paras. 12 to 14 inclusive of your letter No. 549 of the 17th May, and to your letter No. 588 of the 26th of the same month, I am to convey the sanction of the Lieutenant-Governor to an advance of Rs. 10,000 being made under the Land Improvement Act to the estate of Nizam-ud-din, Ward of Court and son of the late Nawab of Mamdot, for the excavation of the Nizamwah canal in the manner proposed by the Financial Commissioner. I am, however, to call attention to the remark of the Chief Engineer, in para. 31 of his letter, to the effect that the designs for the Nizamwah and Ghazanpur canals require further investigation.

4. The enclosures of your letters under reply are herewith returned.

Copy of a letter No. 3839 I, date 6th September 1875, from Colonel H. W. GULLIVER, R. E., Chief Engineer, Irrigation Branch, to T. H. THORNTON, Esq., D. C. L., Secretary to Government, Punjab.

I have the honor to acknowledge the receipt of your letter No. 847, dated 17th June 1875, forwarding a file of correspondence respecting the construction of irrigation cuts in the district of Ferozepur.

2. The case commenced with a letter No. 67, dated 4th January 1875, from the Financial Commissioner to this office, asking the permission of Government to use the water of the Sutlej for the projects described in it, and recommending that it be granted on the understanding that Government will not give compensation for loss or diminution of the supply obtained under this permission should other works be hereafter constructed which may interfere with these canals.

3. This question was discussed by Mr. Egerton, Mr. Thornton and Colonel O'Connel in His Honor's presence on the 6th March 1875, with the result that His Honor decided that he would reserve opinion until the projects had been considered in the Canal Department.

4. Some of the designs were received from the General Branch, and the whole were transferred to Mr. Palmer, the Superintending Engineer of the Lower Bari Doab Circle, with this office No. 2112, dated 17th May 1875, with instructions to furnish a short description of the works, pointing out their most obvious defects.

5. He was not to enter into minute engineering details, but to say whether the designs were so faulty as to cause present damage or to necessitate entire reconstruction hereafter, and to consider the probable returns.

6. Lastly, your letter under reply was received forwarding Financial Commissioner's No. 549, dated 17th May last, in which he states his own opinion that permission to use the water should be given, and that of the Government Advocate that no claims to compensation could, under any circumstances, arise, provided it be clearly stated at the time of granting the water that no such claims will be entertained.

7. Secondly, the Financial Commissioner recommends that an advance of Rs. 10,000 be granted to the Nawab of Mamdot, under the Land Improvement Act, for the construction of the Nizamwah canal.

8. Mr. Palmer's report has now been received, and it appears that the only case in which there is any chance of damage to the country is where the channel of the Shahrwah branch of the Ferozewah canal approaches the station of Ferozepur, which lies in a very low basin.

9. All the channels constructed have the same defect of being very small and having only a very small slope of bed which renders them extremely liable to silt, and the heads of the Aghawah and Dowlutwah being situated on a portion of the river bank which is being eroded may also probably be silted up from that cause.

10. Mr. Palmer considers that the works constructed can scarcely be called canals at all, as the word is understood in this Department.

11. Cuts are made from the river to a low depression into which the water will flow with a fair velocity while that depression is filling, but afterwards will silt up rapidly owing to the small slope of the channel, and it is very doubtful whether the supply channels can be kept open for even one season, and whether the crops sown can be matured.

12. This is an extreme view, and I do not expect that such will be the result on all the canals, although it may on one or two.

13. The cost shown by the Deputy Commissioner is only the cash transactions; no labor supplied by the people is taken into consideration, and a large proportion of the work will have to be done annually on clearing the channels.

14. As shown by Mr. Palmer, it is almost certain that if a bad year occurred the money for the clearances would not be forthcoming from the people and the canals would either have to be deserted or Government money spent on them.

15. If taken over by Government with the view of maintaining them permanently, they would probably have to be re-excavated, and the cost of land, bridges, distributary channels and other works provided.

16. So far they are all in somewhat the same position, but with respect to the water likely to be available they are differently situated.

17. The Aghawah, Dowlutwah and Buchairwah are taken out of the river Sutlej above the junction with the Beas.

The Ferozewah, Myawah, Butawah, below the junction with that river.

The Nizamwah in the Mamdot territory.

18. The supply necessary for the first three channels will probably be—

Aghawah	c. ft. 300
Dowlutwah	„ 500
Buchara	„ 300
Total	c. ft. 1,100

but the whole supply of the Sutlej at Rupar has been allotted to the Sirhind canal, which has taken the place of the canals previously proposed, and which are mentioned by the Financial Commissioner. Consequently, although these canals may work fairly until that canal be opened, the time of their working will

afterwards be curtailed both at the beginning and end of the season, the two most critical periods for the crops.

19. The next three canals are the Ferozewah, with its branch the Shahrwah, for the supply of the city of Ferozepur, the discharge of which is calculated at about 1,100 cubic feet per second, the Myawah and Butawah of which I have no details, but which probably form a part of those for which Captain Grey estimated, that a discharge of 600 cubic feet per second would be required.

20. Their supply will not be so much affected by the water taken off for the Sirhind canal as will that of the channels taken off above the Beas junction; still it will be affected.

21. Portion of the first and last also cross the line of the escape and navigation channel from the Sirhind Canal.

22. In this office No. 780 I, dated 26th March 1869, notice was given that the schemes for permanent canals were under consideration; and although in his memorandum dated 24th November 1874, Captain Grey states that "the Irrigation Department has always had too much in hand, and the ensuing season in which the irrigational capabilities of the district were to be examined has never yet arrived," this was so far from correct that the general scheme for the permanent canal had been sanctioned in April 1868. Work commenced in 1869-70 on the upper portion, and the detailed surveys and estimates for the whole submitted in 1871, and sanctioned by the Secretary of State in 1873.

23. Moreover a general scheme for a permanent canal from the Sutlej between Hurreeke and Ferozepur had been prepared in 1870, and orders issued in 1873 for the details of it being gradually proceeded with; hence as a large portion of the district would be provided with permanent irrigation, it was not probable that the Irrigation Department would prepare small schemes for temporary works.

24. Considering the above facts I do not think that the Canal Department can be expected to pay any compensation for interfering with the canals which will be cut across by the construction of the Sirhind Canal.

25. It will be seen from the above that special care will be necessary in granting permission for the use of the water; that it is fully understood that no compensation will be given for the cutting off or reduction of the supply.

26. And in the case of the Ferozewah and its branch the Shahrwah and the tail of the Butawah cut: that the liability to have the supply cut off by the Sirhind canal channel should also be notified.

27. No compensation should in my opinion be granted in this latter case, and the people should be warned that if this channel is supplied with water from the Sirhind Canal they will have to pay the water-rate.

28. I have now to refer to the Nizamwah and Ghazanfar in the Mamdot territory. Their supply will be slightly affected by the water drawn off by the Sirhind Canal in the same manner as the Ferozewah and the other channels situated below the Beas junction.

29. These heads are well situated; but the fact adverted to by Mr. Palmer that the bed is placed 3 feet above the winter surface of the river would in my opinion render them nearly useless.

30. The sunk weir alluded to by Mr. Palmer would either be carried away, cause the channel above it to silt up to the junction with the main stream, or divert the course of the river altogether—in any case the canal head would be rendered useless until the water was 3 feet above the summer level, a height now seldom reached until late in May, and which will probably be further deferred on the opening of the Sirhind Canal.

31. I think therefore that although permission to use the water might be granted on the same terms as on the canals in Ferozepur, the design for this canal and the Ghazanpur which takes out of the same channel require further investigation.

32. In conclusion, I would say that all inundation canals, especially from such a river as the Sutlej, require to be designed most carefully, almost more so than permanent canals, and that all works begun without such consideration,

although they may act for a time, will almost certainly have to be either closed or made over to the Canal Department, who then have to begin again from the beginning as in the case of the Lower Sohag canal in Montgomery.

33. There is nothing in any of the work executed which would interfere with the improvement of the canals if it should hereafter be thought necessary to undertake such a work.

34. The correspondeuce received with your letter under acknowledgment is herewith returned, and I have the honor to attach copies of the report on the canals with tracings by Mr. E. C. Palmer, Superintending Engineer, Lower Bari Doab Circle, for information.

Report on certain arrangements for irrigation carried out in the Ferozepur District by the Deputy Commissioner.

Deputy Commissioner's map.

1. From the accompanying tracing of the map furnished me by the Deputy Commissioner, it will be seen that besides the canal, of which estimates and plans were sent with the Chief Engineer's letter No. 2112, calling for this report, there are a considerable number of minor cuts from the river which were constructed before the correspondence regarding the larger works took place; on these I am not, so far as I can gather, required to report specially.

List of works. examined.

2. The heads of each of the following canals I have personally examined in company with the Deputy Commissioner, from whom I have received every assistance in obtaining the data on which to frame the following opinions of these works,—

The Dowlutwah,
The Nizamwah, (Mamdot),
The Buchera,
The Ghazunfar,

and Mr. Bayley, the Executive Engineer of the Upper Sutlej Division, has examined the Ferozwah or Barneswah.

Design furnished.

3. Estimates and section of the Dowlutwah and of the Ferozewah have been furnished me, also of the Shahrwah—a rajbaha from the latter for the town of Ferozepur.

Points on which opinion is called for.

4. I am required to confine my remarks to the following points.

I.—Whether the design is so faulty as to cause present damage or to necessitate entire reconstruction hereafter.

II.—To describe briefly each work as it stands pointing out defects, and suggesting remedies.

III.—To calculate the probable returns, if administered by the district authorities, and the same if made over to the Irrigation Department.

General security of the works.

5. With the exception below mentioned, I see no reason to anticipate present damage in any of the works—if I may except occasional flooding of crops by sudden risings of the river, where by the reason of the dykes thrown across the old channels being higher than the banks, all surplus water which cannot be drawn off by distributaries, or passed round the dykes by an efficient fall, must necessarily overflow the banks and do a certain amount of damage to crops and also a certain amount of benefit to other lands; still in this case the individnal suffering the damage would undoubtedly claim compensation.

Exception.

6. The exception I allude to is on the Ferozewah or Barneswah described at para (24).

Precautionary measures necessary.

7. It is imperatively necessary in my opinion that the right bank of this channel immediately above the dyke at Chowgutta should be sufficiently lowered to ensure the passage of any unusual flood coming down the canal to the right or in the direction of the continuation of the old channel and towards the river, and that all low places on the left bank be carefully embanked.

8. The necessity of this precaution arises from the fact that the ground in and especially around the cantonment of Ferozepur is nearly 5 feet lower than that on which the town and fort stand—See sheet of levels supplied from the office of the Sirhind Canal Circle herewith enclosed, marked sheet No. 1. If even a small stream were allowed to overflow on the left bank it would very rapidly cut itself a deeper and larger channel and the cantonment would be flooded in a few hours.

Reason for.

9. I do not agree with Mr. Bayley that the failure of the Jullundur road bund would only be followed by the harmless passage of water through cantonment in the ample and deep bed of the Sookha nullah. This nullah is crossed by more than one road, and the waterways provided are sufficient only for local drainage. In the event of a heavy flood the nullah would rapidly fill and overflow its banks, flooding the low ground on which the cantonments are built.

Nor do I consider the arrangements for diverting the water into the river adequately designed.

No overfalls or waste weir is mentioned in the estimate. I cannot consider it safe until at more than one place the right bank is lower above the Chowgutta dyke.

10. That this flooding is a probable event I do not say, but that it is possible I think it right to point out, for such a disaster would certainly bring down every building in the place.

11. The next point is whether these works would require to be entirely reconstructed if hereafter Government was to decide on transferring them to the Irrigation Branch.

12. From what I have seen of the works it does not seem to me that reconstructiou would be required in any instance. The lines, if not the most economical and such as would have been selected by an Engineer after proper survey, are at all events not glaringly incorrect.

It is not so much what has been done as what remains to be done that would strike an Engineer who had to make these works directly remunerative, and on this point I shall allude further on when referring to the returns which may be anticipated from the works.

Description of the works.

13. The brief description of each work called for is given below.

The Agahwah.

The Aghawah.

14. Referring to the map accompanying the first canal taken out from the river is the Aghawah. This has been begun since the correspondence forwarded to me commenced, and a special report on it does not therefore appear to be required.

Before proceeding to the Dowlutwah I may as well describe it. A channel 40 feet wide is being excavated down the bed of an old channel (the Sookha) some 2½ feet deep at a slope of six inches to the mile for about a mile, the cutting then ends and the water will flow down the old channel for 11 miles, thence the water or a portion of it is to be divested into a distributary which will deliver the water on the surface at the fifth mile. The work was unfinished at the date of my inspection, 19th June.

The Dowlutwah.

The Dowlutwah.

15. A cut some 3½′ deep and 35′ wide, slope 6 inches to the mile, down an old channel known as the Buchera 2 miles long. Thence the water flows down the old channel 9½ miles. Here a massive dyke diverts the water into an artificial cut 20 feet wide, called the Soochetwah 14 miles long, and the surplus water is intended to be passed round the dyke by a horse shoe channel into the old channel behind the dyke. This water has therefore to fall from the height to which it is held up to its normal level in the old channel about 8 feet. This fall will be constructed of fascines or crates of loose materials. It was not designed at the date of my inspection. The river was unusually low and the Soochetwah cut was carrying all the water with a depth of about 3½ feet.

At the 14th mile on the old channel another dyke is to divert the water into a tail channel 32 feet wide 16 miles long where it forks into two distributaries 6′ and 3′ wide.

16. The head of this work on the river is not in my opinion a good one; the left bank of the river above it is suffering rapid erosion, and as I passed the villagers were removing their trees in anticipation of further action on the rising of the river. Under such circumstances my experience leads me to expect the complete silting up of any canal head even with a good slope.

Defects in the Dowlutwah.

17. It is impossible with the data I have to do more than give a mere approximation of the discharge of this head channel. I have no river gauges above the junction of the Beas and Sutlej.

Data wanting for calculating the discharge accurately.

The longitudinal section does not give either the winter level or the flood level of the river. So far as I could learn the bed of the canal is at about the winter surface of river.

The rise in the river from winter to ordinary summer level at this point appears to be about 6 feet, and during high flood 8 feet.

The width of the cut is 35 feet and its depth at the first cross section 3·1 feet, giving an area of 108·5 square feet (the sides being vertical) with a rise of 6 feet, there would be a depth overflowing the artificial channel of 2·9 feet; this overflow gives an increase to the area of 361·75 square feet, or a total area for high supply of 470·25; the perimeter 171 feet and the slope is 6 inches per mile, the consequent velocity is 1·09 per second and the discharge 519 cubic feet per second.

18. To judge how far this is likely to maintain its channel without silting, let me compare it with the Khanwah canal with whose behavior under precisely similar conditions, but with a much sharper slope, we have had long experience.

Improbability of its keeping open.

19. Its width is 60 feet depth with high supply 9 feet, slope 1 in 6,000, which by the same formula gives a velocity of 2·92.

Dimensions of the Khanwah.

The head channel of the Khanwah silts badly, with a velocity more than double that of the Dowlutwah.

20. I cannot think then that the latter will maintain its supply throughout a season. Indeed from the present set of the river on its left bank, it might be silted up entirely by the first freshet.

The chance of its maintaining supply remote.

21. The next is the Buchara.

The Buchera.

This if formed by a channel averaging 3 feet deep, 40 feet wide, and 4 miles long, with a slope of 6 inches per mile connecting the Buchera dry nullah with the river, passing down the bed of the nullah for 11½ miles, a dyke across the nullah here directs the water into an artificial cut 5 miles long, which bifurcates forming two distributaries, the one 5½ the other 2½ miles long.

22. The head of this canal appeared to me well situated. Without a proper survey of the river bank above and below, I am unable to say if it be the best which could be selected; it is undoubtedly more to be depended on for stability than that of the Dowlutwah; the very flat gradient given is in my opinion much too small to ensure its not silting up before the irrigating season ends.

Conditions at the head favorable.

23. I estimate its discharge to be about 300 feet per second with a depth of 5 feet, having a velocity of 1·48.

Discharge of the Buchera.

I have neither sections nor estimates of this work, the dimensions quoted have been furnished me by the Deputy Commissioner.

24. The next in order going down the river is the Ferozewah.

The Ferozewah.

This has been inspected by Mr. Bayley, Executive Engineer, Upper Sutlej Division, Inundation Canals, from whose report I gather the following particulars.

The head channel is taken out from a small arm separated from the main stream by an island some $\frac{3}{4}$ mile wide, covered with tamarisk jungle. This arm of the river is about 3 miles long and about 300 feet wide, and has an appearance of permanency.

The canal cut is 35 feet wide with a slope of 6 inches to the mile, discharging 300 cubic feet per second for six miles, where it joins a natural channel down which it flows $1\frac{3}{4}$ miles to the Sookha nallah, thence 8 miles to the village of Chowgutta, where a dyke heads up the water to the surface and a high level canal is taken out to "Bala," 20 miles.

Thence the Shahrwah or town water-course is commenced and carried through a cutting of some miles; reaches the Sookha nullah in which it flows to a dyke constructed across the nallah over which passes the Ferozepur and Jullundur roads. From this point is taken off at a high level the channels for supplying the town and station of Ferozepur.

Precautions taken to avoid flooding cantonments.

25. Mr. Bayley adds precautions have been taken to prevent the water getting into cantonments in case of floods; the surplus water can be turned back into the river by a channel up stream of the bund on the Jullundur road and also in other places further up.

Should this bund at the Jullundur road be breached or turned in flank, the only effect would be a rush of water down the Sookhah nallah through cantonments without overflowing its banks.

The nallah here is from 200 to 300 feet wide and 9 to 10 feet deep.

I have already remarked at para. 9 that in the absence of a proper survey and levels, I do not consider the security of cantonments has been properly provided for.

The Nizamwah.

26. The next is the Nizamwah.

This canal, constructed for the Nawab of Mamdot, has an excellent back water-supply channel from the river, which feeds a stray branch of the river from which the canal takes out. I have seldom seen a more favorable position for an inundation canal head; it is not dependent on one head, no less than three, two of which are very good, contribute to supply it.

The high level of the country it is destined to supply is, I imagine, the reason for placing the bed of the head channel so high, nearly 3 feet, so far as I could judge, above winter surface of river.

This necessitates some sort of sunk weir in the river channel below the canal head, which ensuring the early and the late supply in the canal will cause no obstruction to flood. Such an arrangement the Deputy Commissioner proposes to add to the head works.

Position of canal good.

27. The head channel is 40 feet wide and its alignments following for some distance, the lowest terrace of the river bank defended from river flood by the town of Mamdot and high ground in the vicinity is in my judgment the best that could have been selected; it reaches the high land or *bángur* at the 30th mile, having its course aligned along the depressions of the Loonghi and Sookhah old channels.

Discharge.

28. From what I could see of the head channel and level of river surface at the date of my inspection, a greater depth than 4 feet will hardly be average with the bed at the present level, this depth will give a discharge of 207·5 cubic feet with a velocity of 1·29.

Ghazanfar.

29. The next projected canal is the Ghazanfar, which takes out from the same branch of the river as the Nizamwah. The position of the head is good. The work is not commenced.

This concludes the list of works on which a report is called for.

Probable returns.

30. The next point on which I am required to give my opinion, is regarding the probable returns—

1st.—Under the management of the district authorities.

2nd—If transferred to the Irrigation Department.

31. In order to compute the returns, it is obvious some approximation to a capital account must be made out. I can only do so by putting a fair market value on the amount of work executed.

Capital account.

I have been furnished by the Deputy Commissioner with statements of the quantities of work done on each, and also with the cost of the preliminary surveys, &c.

32. In appendix A I have tabulated these figures, adding to each canal its share of survey and miscellaneous expenditure, and exhibiting the amount of district funds that have been expended and the balance of the value of the works due to the villagers, who are presumed to have contributed this amount of labor for nothing, or rather on the promise that they should get the use of the water for nothing for a term of years.

Appendix A.

33. From this appendix it will be seen that the Dowlatwah works (without taking into account the value of the land, of the extent and value of which there is no record) are valued at Rs. 19,331.

The Dowlatwah returns.

Its discharge is estimated at 519 cubic feet per second (see para. 17), the duty obtainable per cubic foot, I cannot place so high as the Deputy Commissioner who anticipates 50 acres, considering the smallness of the discharge as compared with the vast size of the greater portion of its channel. I think 30 acres will be the maximum, supposing the head channel remains open throughout the season. The irrigated area will therefore be 519×30=15,750 acres.

34. The incidence of the water tax on the Government Inundation Canals on the other bank of the river is at present Re. 1-8 per acre per annum nearly. The annual value of the irrigation at the same rate would therefore be 15,570×15=Rs. 23,355.

Grass income.

35. The working expense will, if the canals are administered by the district authorities, consist of silt clearance and repairs to banks; the only special establishment provided by the Deputy Commissioner is an official called "Mirab," whose pay will scarcely affect the annual cost, which, judging from the average of past years on the Upper Sutlej Division, would be about 0-12 per acre. Thus the net return would be Rs. $\frac{23,355}{2}$=Rs. 11,667 against Rs. 19,331 which, according to the Deputy Commissioner's quantities, is the total value of the work.

Working expenses.

Net income, Dowlatwah.

Of course this income could not be expected at once; it represents the ultimate irrigating power which would take some years to develop.

Net income, Buchera.

36. The same figures for the Buchera canal are—

Cubic feet. Acres. Rs.

$\frac{300 \times 30 \times 1\cdot5}{2}$ = Rs. 6,750 against Rs. 13,004 total cost.

Net income, Ferozewah.

37. And for the Ferozwah—

Cubic feet. Acres. Rs.

$\frac{400 \times 30 \times 1\cdot5}{2}$ = Rs. 9,000 against Rs. 28,259 total cost.

Net income, Nizamwah.

38. And for the Nizamwah—

Cubic feet. Acres. Rs.

$\frac{208 \times 30 \times 1\cdot5}{2}$ = Rs. 4,680 against Rs. 34,919.

It is probable the contemplated construction of a weir below the head of this canal, while adding some Rs. 5,000 to the capital account, will increase very considerably the average discharge and consequent income.

Return possible to shareholders.

39. The above calculations show very roughly what profit to the shareholders in these canals would be if they can be kept open during the term, they are allowed to use the water for nothing, or in other words, if the native bankers who have advanced the money or those who have given the labor were to impose the same tax per acre which the Government claims on its canals, they would be in a position to sell the Government water to cultivators with the net profit shewn, making no allowance for new head channels or any extra expenditure beyond ordinary silt clearance.

Returns to Government.

40. The return which Government may expect for this free grant of water for ( ) years is the prospect of enhancement of land-revenue at next Settlement, not only on the area actually irrigated, but on the neighbouring lands whose prosperity would doubtlessly be augmented.

The money value best appreciated by Settlement Department.

41. To bring this to money value is a question for a Settlement officer to determine.

Returns if administered by the Irrigation Branch.

42. I have next to consider what the returns would be if the works were taken over by the Irrigation Branch.

Revised capital account.

43. But to do this I must go back to the capital account which will require very serious modification.

In the first place the arrangement by which an acre of land lying in depression (which is generally the only land culturable by rain crop) is exchanged for an acre of high land impossible of culture, save by artificial irrigation, is not a transaction which the Local Government in this Department would probably approve; a fair valuation of the land would have to be made and the owner compensated not by alienating a portion of the village common property, but by cash.

In the second place the gradient of the head channels would all have to be increased from half a foot per mile to one foot a mile. This would of course materially increase the excavation.

Thirdly.—A second head is required in my opinion for any canal on which the crops on 5,000 acres or more depends.

Fourthly.—Bridging would be required to be provided. No Deputy Commissioner will allow a Canal officer to interfere with the traffic of the country with his irrigation cuts, and it must be remembered that local traffic increases with the increase of cultivated area.

Fifthly.—Falls of some sort must be constructed at every point where the water is held up in the old channel by a dyke, so as to permit the surplus water to pass round and fall into the old channel bed beyond.

Sixthly.—Some sort of shelter for the inspecting officers would be required, and lastly, an adequate establishment to prevent the general scramble for the water which our experience shows to be the result of leaving the people to manage for themselves.

Past experience in working Inundation Canals.

44. In some statistics recently submitted to the Chief Engineer embracing the results of the working of the Inundation Canals of the Upper Sutlej series for the past four years, I showed that on similar works a capital of Rs. 1,500 per 100 acres might be sunk with a fair probability of a return of 7 per cent.

Results applied to the case of the Dowlatwah.

45. If, then, I were directed to put the Dowlatwah say in an effective condition to provide reliable irrigation for 15,570 acres, I should feel justified (if it were necessary) in expending $\frac{15,570 \times 1,500}{100} = 2,33,550$ Rs. I have not the slightest doubt that an expenditure of one-third this sum would in this case suffice, includ-

ing the cost of preliminary survey, which has all to be done, and so approximately for the rest,—they might all be made efficient by an expenditure far less than that which experience has proved may safely be invested in similar remunerative works.

Actual cost up to date unknown.

46. The figures shewn by the Deputy Commissioner as the cost of the little work that has been done are no guide whatever to the cost of the work. These sums might with more accuracy be described as the amount to which cash transaction was limited.

Definition of an Inundation Canal.

47. And this brings me to the question of the definition of a canal.

It must be puzzling to the non-professional reader of this correspondence to see that Inundation Canals constructed by the Civil authorities cost a mere fraction of works nominally similar designed by the Irrigation Branch, a branch whose whole time is devoted to the subject.

Responsibilty of Government assumed.

48. I assume that any irrigation irrigated by Government from works constructed either directly or indirectly under the auspices of its officers will be maintained,—*i. e.*, a large tract of newly cultivated land would not practically be allowed to relapse into desert, because the works on which its irrigation depended had fallen into disrepair; it is necessary then to see that such a work is so designed that its maintenance in a state of efficiency may be effected within its own income year by year.

Unless the probability of such a work fulfiling these conditions were very clearly demonstrated, it would in no case be recommended to Government by the Chief Engineer of this department.

This, then, I take to be the definition of an Inundation Canal.

The works reported on of a different character.

49. But if this be granted surely the works I have reported on above are of quite a different nature, they are not canals at all; a cut is made to admit the water from the river into a low depression into which it will flow with a fair velocity while the old channel is filling, silt will then rapidly deposit in consequence of the too small slope given, and it is in my opinion very doubtful if the supply channel can be kept open for one season, and doubtful if the crops sown on its irrigation can be matured.

Incomplete.

50. In short, I do not consider that a canal, as I understand the word, has been made, or that the figures shewn by the Deputy Commissioner are any guide at all to the real cost of the work thus commenced.

The work done is what would be called "annual silt clearance" in a canal officer's account, and will have to be repeated each year, to which is added the trifling cost of the earthen dykes thrown acress the old channels.

Omissions in estimates.

51. There is no provision in the estimates for land, bridges, falls or supplementary supply channel; but it is evident some one must pay for these in some shape, and for Government to have any appreciation of the cost it is absolutely necessary to reduce all expenditure to money value as required by Government in the case of canals under the management of the Irrigation Department.

Improbability of future successful maintenance by shareholders.

52. These works are constructed, or rather opened, by private capital, aided by public funds. No income is collected. So long as the repairs necessary to keep the canal flowing are not more than the irrigators can pay for, or execute, the investment may be a good one both of private and public funds; but when a bad year comes (as it probably will in a few years), when after a failure of the canal supply no crops are brought to maturity, that will be the year when the silt clearance that follows will be at the heaviest, and when very possibly a new head may have to be made from the river. No one pays for the water he uses, and no one is legally bound to contribute towards repairs. Is it to be expected that the people who in past years have reaped large profits by the gratuitous use of water will have had the prudence to have

put by some of these saving to meet such a contingency; or is it contemplated to again and again use district funds for the benefit of canal irrigation only?

Requirements.

53. With regard to direct returns, I cannot think the investment is at present possessed of much stability. Nor do I consider the whole project on a sound footing, until a much larger expenditure is devoted to the works, and a fair water-rate levied on those benefiting by them. That such expenditure would be readily repaid there can be no doubt, nor would this expenditure, even if laid out by this branch, be much more extravagant than if managed by the Civil authorities.

Comparative cost of work.

54. Captain Grey, I observe, values earthwork on these canals at $2\frac{1}{2}$ annas per 100 cubic feet, or Re. 1-9-0 per thousand; and in a memorandum by that officer without date, forwarded for my information with your No. 2899, I observe he imagined his earthwork was done at less than half the rates paid by the Canal Department: further enquiry would have shown him that earthwork of similar nature was being done at the same time (January and February 1874) on the Thummun rajbuha within a few miles of his district by this Department @ Re. 1-8-0 per thousand.

55. I beg to return the enclosures to your No. 2112—*viz.*, Secretary to Punjab Government, Public Works Department, No. 796, dated 22nd April, with its enclosures, also a tracing of a portion of the Ferozepur district, shewing position of all canals, and a sheet containing a protraction of all the levels that have been taken in the neighbourhood by the Sirhind Canal officers.

APPENDIX A.

Valuation Statement of the work done on certain irrigation arrangements in the Ferozepur District.

N.B.—The quantities of earthwork and the cost of survey and miscellaneous expenditure are supplied by the Deputy Commissioner.

Name of Canal.	Description of work.	Quantity in cubic feet.	At per 1,000 c. ft.	Value.	Contributed from Public funds.	Balance defrayed by private parties.
			Rs. A.	Rs.	Rs.	Rs.
Dowlatwah ...	Excavation ...	67,01,548	2 8	16,754		
	Bunds	2,45,333	4 0	981		
	Share of survey @ 9 per cent. and miscellaneous on ...	17,735	...	1,569		
	Total ...	...	...	19,331	6,596	12,735
Bucherwah ...	Excavation ...	46,66,018	2 8	11,665		
	Bunds	66,721	4 0	266		
	Share of survey @ 9 per cent. and miscellaneous on ...	11,931	...	1,073		
	Total ...	...	...	13,004	3,073	9,931
Ferozewah and Shahrwah.	Excavation ...	87,18,679	2 8	21,796		
	Bunds	2,13,802	4 0	855		
	Do.	6,81,365	4 0	2,725		
	Share of survey @ 9 per cent. and miscellaneous on ...	25,376	...	2,283		
	Total ...	...	...	27,659	11,483*	16,176
Nizamwah ...	Excavation ...	1,25,35,809	2 8	31,339		
	Bunds	1,74,382	4 0	697		
	Share of survey @ 9 per cent. and miscellaneous on ...	32,036	...	2,883		
	Total ...	...	...	34,919	None.	Mamdot estate.

* 3,600 from Municipal Funds.

Extract, paras. 3 and 4, of letter from Secretary to Financial Commissioner, Punjab, to the Secretary to Government, Punjab,—No. 1196S—6375, dated 2nd November 1875.

Para. 3. In his second letter the Commissioner draws attention to certain proposals made by Captain Grey in Supplement III of the printed report, which is in the form of a memorandum by Captain Grey for the use of the Superintending Engineers, Lower Bari Doab Circle, which are—

I. That the use of the water of the river Sutlej be lent by Government to the people till Settlement, by which time they will have reimbursed themselves the cost of constructing the canals.

II. That it shall be optional with the Government to take over the canals at a new Settlement, paying the value of the land they occupy.

III. That it shall be optional with Government to take over the canals at once by paying the value of the land occupied by the canals, plus the cost of their construction. In a marginal note it is said that 1¼ lakhs of rupees would at the present moment fairly reimburse all the parties concerned.

The first proposal is the same as that made by Mr. Fanshawe in para. 4 of Chapter V of his report.

4. The question of the conditions on which the use of the waters of the Sutlej should be allowed by Government for these canals has already been decided, and the Financial Commissioner is of opinion that the permission given by Government to the use of the water is enough, and that it should be accepted as sufficient. The Financial Commissioner would not recommend that the Government should bind itself to anything more, or agree to be bound by any fresh stipulations.

Extract, para. 1 of a letter from LEPEL GRIFFIN, Esquire, Offg. Secretary to Government, Punjab, to the Secretary to Financial Commissioner, Punjab,—No. 726, dated Lahore, 8th June 1876.

Para. 1. With reference to your letter No. 1196, dated the 2nd November, submitting a report on the Inundations Canals of the Ferozepur district, I am desired to forward, for the information of the Financial Commissioner, copy of letter No. 2183 I of the 15th May from the Joint-Secretary, Public Works Department, Irrigation Branch, and to state that the Hon'ble the Lieutenant-Governor in that Department thinks it unadvisible that the Government should take over these canals.

Copy of a letter No. 2183 I, dated 15th May 1876, from the Joint-Srcretary to Government, Punjab, Public Works Department, Irrigation Branch, to the Secretary to Government, Punjab.

In reply to your No. 1706, dated 30th November 1875, I am desired to state that His Honor in this Department is averse to the adoption of either proposal III of para. 3 of letter No. 1196 S, dated 2nd November 1875, from Settlement Secretary to Financial Commissioner, which was forwarded with your letter under reply, or the proposal made by Captain Grey in paras. 5, 8, 9 and 11 of Supplement III to Mr. Fanshawe's report on the canals in the Ferozepur district.

2. The Lieutenant-Governor is of opinion that the transfer to this Department of the management of and distribution of water from these canals would, under existing circumstances, either entail upon Government (in the case of adopting Financial Commissioner's proposal III) a large additional outlay for which no funds are available, or throw upon the zamindars (in the event of adopting Captain Grey's proposals) a greater burthen of statute labour and additional assessments than they could well bear.

3. I am to return Secretary to Financial Commissioner's 1196 S, dated 2nd November 1875, and its enclosures, No. 310 of the 14th October and 312 of the 15th October, with their enclosures, and with a printed copy of Mr. Fanshawe's report; the duplicate copy of the latter has been retained.

The zamindars of Ferozepur have always understood that they must eventually pay for the management of their canals, and that the Revenue staff were only to be temporarily burdened therewith.

The work entailed in this management is fully detailed in appendix IX of the printed Canal Report. It is not so serious as represented by Mr. Steel, but is certainly sufficient to require the supervision of a special officer. This year, in the Zira tahsil, the kharif crops have been lost owing to a very ordinary accident at the head of the canals, which neither the officials nor the people had sufficient knowledge and experience to remedy. The Deputy Commissioner eventually sent up a competent officer, the Tahsildar of Ferozepur, to the spot, but he arrived too late to effect anything. Clearance also requires supervision. The system is simple. The true bed of the canal is shown by benchmarks at every 330 feet. The average depth of silt on these × by the breadth and length gives the total cubic contents of the clearance. This divided by the irrigated area of the canal gives so many cubic feet of clearance per acre. The number of acres irrigated in any village is thus the revenue of the task of that village. A *duk* is then allotted to it, being so many numbers (or lengths of 330 feet each between the bench marks) containing cubic contents of clearance aggregating the amount of the village's task. Of course this is a matter requiring competent supervision; so also is the preservation of the embankments which the people are much given to cutting for the purpose of flooding their lands. Moreover, the allotment of the vorás or turns for the opening of the irrigation cuts of various villages is a matter for authoritative interference. Of scientific work there is very little. No great skill is required to design a rajbaha or a new head, though experience and judgment and local knowlege are required for selecting the line of either. I have found my engineering knowlege adequate for designing and completing this system of canals, and what I learnt from Mr. Barns I can impart to another. Thus it will appear from all the foregoing that it is not a scientific Engineer that is required so much as an official of intelligence, activity, irreproachable character and thorough acquaintance with the district and people—such an official can be found in Babu Maya Dass, now Tahsildar of Lahore. My proposal therefore is that Maya Dass be appointed an Officiating Extra Assistant Commissioner and detailed to Ferozepur on special duty. That he should be a member of the district staff; but being thus specially employed, should not be liable to transfer or to being employed upon other work than public works. That his duties should be defined as connected with the canals, roads and bridges of the district, and (incidental to the former) to the supervision, when required, of the girdawari and alluvion-diluvion measurements of the irrigated tracts. I propose that he should have as special staff on each of the Ferozepur and Zira tahsils a Canal Naib-Tahsildar on Rs. 50 as proposed by Mr. Steel, and a Canal Muharrir on Rs. 20, and 6 peons on Rs. 5 each, and a stationery allowance. The cost of this special establishment and his own pay to be realized by a *báchh* on the irrigated area.

SCHEDULE OF COST.

		Per annum.
Pay of Extra Assistant at Rs. 250 per mensem	Rs.	3,000
Travelling allowance at Rs. 3, for 6 months	"	540
Two Naib-Tahsildars at Rs. 40	"	960
Two Muharrirs at Rs. 20	"	480
12 Peons at Rs. 5	"	720
Stationery	"	120
20 Watchers for three months, at Rs. 5	"	300
Contribution to form a Canal Fund	"	3,000
Total ...	"	19,120

Deduct half pay and travelling allowance of Extra Assistant Commissioner contributed by Mamdot ...		Rs.	1,770
Remaining to distribute by *báchh* in Ferozepur and Zira tahsils in addition to two pice per acre for Mirabs ...		"	7,359
Irrigated acreage (according to annual Revenue Report) 1878-79 for entire district for	Rs. 84,133		
As follows:—Ferozepur	" 37,759		
Zira	" 23,528		
Muktsar	" 22,845		

Of this sum 24,000 acres may belong to Mamdot, as the abiana realized there, at 8 annas an acre, appears to be Rs. 12,000. All these measurements are much under truth, for they are made in the spring, and consequently the Patwaris are dependent on the zamindar's information. These naturally understate and do not show all irrigated area even in Ferozepur and Zira, because the clearance is assessed thereon, and because they pay an acreage rate to Mirabs. How much less is the area likely to be correct in Mamdot, where they pay an abiana.

I believe the irrigated area to be nearly equal, say 60,000 acres in Ferozepur and Zira, and 50,000 acres in Mamdot. The *báchh* in the former will then fall under 2½ annas an acre including Mirab's rate, and including Rs, 3,000 per annum which will go towards forming a canal fund for new heads and other large works independent of the yearly clearance.

No. 4C, dated Camp Sirsa, 17th December 1880.

From—W. M. YOUNG, Esquire, Secretary to Government, Punjab,
To—The Secretary to Financial Commissioner, Punjab.

I am desired to acknowledge the receipt of your No. 5746* of 16th August last on the management of the Ferozepur District Inundation Canals.

* To the address of the Joint-Secretary, Irrigation Department.

2. As it had been decided by the Lieutenant-Governor that Major Grey should on his return from furlough be reposted to Ferozepur, it was thought desirable that that officer should have an opportunity of expressing his views on the proposals made by Mr. Steel before they were sanctioned by Government. During His Honor's recent march through Ferozepur, Major Grey recorded his opinion in a Memo., of which a copy is herewith forwarded for the information of the Financial Commissioner. In view of the experience gained in Muzaffargarh by the deputation of Bashir Ahmad to superintend the working of the Inundation Canals, Sir Robert Egerton is disposed to favour Major Grey's view and to prefer the appointment of an Extra Assistant Commissioner to that of an Engineer, and this also was Mr. Lyall's original wish. I am accordingly to request that the Financial Commissioner will favour the Lieutenant-Governor with his opinion on the proposals now made at an early a date as possible, as the annual canal clearances usually commence in the beginning of January.

No. 290, dated Lahore, 12th March 1881.

From—W. M. YOUNG, Esquire, Secretary to Government, Punjab,
To—The Offg. Secretary to the Government of India, Home, Revenue and Agricultural Department.

WITH reference to your letter No. 5-794 F., dated 22nd August 1872, laying down that no new cess or tax not distinctly authorized by a specific law may be imposed without the consent of the Governor-General in Council, I am desired to address you in connection with the Inundation Canals of the Ferozepore District, and to submit the correspondence marginally noted for the information of the Government of India.

Proceedings 4 A., of December 1880. Financial Commissioner's No. 48 S, dated 15th January 1881.

2. It will be recollected that, in 1873-74, Major Grey, C. S. I., Deputy Commissioner of Ferozepore, constructed a number of inundation canals in that district. This work was noticed in the Summary of the Administration Report for 1874-75 (para. 32), and elicited the special commendation of the Secretary of State, as conveyed in his despatch No. 27, of 12th April 1876. Since that time the canals have worked successfully, and have irrigated yearly about 80,000 acres, of which 25,000 are situated in the Mamdot estate, the canals of which were constructed out of the income of the Nawab, who charges 8 annas per acre as water-rates. Hitherto, the whole work of the canals has been carried on by the District staff; but this labor somewhat over-taxes their powers, and it is proposed now by Major Grey, who has recently returned to the Ferozepore District, to carry out his original intention, and appoint a small special staff for the management of the canals of the district, to be paid for by a low average rate levied on the area irrigated yearly as ascertained by measurements. It is recommended that this establishment shall consist of 1 Extra

Assistant Commissioner, 2 Naib Tahsildars, 2 Moharrirs and 12 peons throughout the year, and 20 watchmen to guard the dykes during the three months of high floods. It is calculated that, with contingencies and a contribution of Rs. 3,000 per annum to form a canal fund, to provide against special works which may be rendered necessary by variations of the river's course, this establishment will cost Rs. 9,120 per annum, which sum is reduced to Rs. 7,350 by the fact that the services of the Extra Assistant Commissioner will be utilized for the canals of the Mamdot estate as well as of the rest of the district, and that half his pay will therefore be drawn from the Mamdot revenues. It will be necessary, however, to add Rs. 250 on account of the contribution towards pension which will be demanded from the Extra Assistant Commissioner while deputed to this duty, and this will raise yearly the amount to levied to be Rs. 7,600. This sum, distributed over the area of 55,000 acres, would give a rate of a little under $2\frac{1}{4}$ annas per acre. There is every reason, however, to believe that the area irrigated is in excess of the above figure, and that the rate will therefore not be heavier than 2 annas per acre.

3. All officers are agreed that a special establishment is necessary for these canals, the work entailed by which is fully stated in the accompanying correspondence. The people have understood all along that they would ultimately have to pay a small water-rate, and are fully prepared to do so. On receipt of sanction to these proposals of the Government of India, the Lieutenant-Governor is prepared to depute an Extra Assistant Commissioner to the Ferozepore District to hold special charge of these canals. It was at one time proposed that an Engineer should be appointed, but His Honor would mnch prefer to see the arrangement now recommended, which is supported both by Major Grey and the Financial Commissioner. The proposal is similar to that recently introduced on the Muzaffargarh Inundation Canals lately transferred to the Irrigation Department; such canals do not need a trained Engineer so much as an active and zealous officer who is well acquainted with the people and their ways, and possesses sufficient practical knowledge to carry out all necessary repairs and clearances.

4. Sir R. Egerton feels assured that for their effectual management it is necessary to provide a special establishment, such as that detailed above, for these canals; and I am accordingly to solicit the sanction of the Government of India to the imposition of an average cess calculated to produce Rs. 7,600 yearly, and varying in actual amount according to the irrigated area of each year. As Major Grey is very anxious to start the working of the new scheme, before the canals begin to flow in the present year, I am to ask that early sanction may be accorded to this proposal.

No. 48 S., dated Lahore, 15th January 1881.

From—F. C. Channing, Esquire, Secretary to Financial Commissioner, Punjab,

To—The Secretary to Government, Punjab.

The Financial Commissioner requests me to state, in reply to your letter No. 4 C., of the 17th December, that, subject only to the remark hereafter contained, he accepts Major Grey's proposals as to the appointment of an Extra Assistant Commissioner on special duty to the Ferozepore District, the officer so appointed being not liable to transfer or to being employed on other duties than those for which he is to be specially attached to the district. It was Mr. Lyall's original view that such an officer should be so appointed, and he thinks that under Major Grey as Deputy Commissioner it will certainly be the best arrangement for the working of the Ferezepore Canals. Other Deputy Commissioners may want engineering assistance occasionally, but this could probably be afforded them, when necessary, by an officer of the Irrigation Department.

2. The Financial Commissioner, however, thinks it necessary to point out that, as the Extra Assistant Commissioner will be practically in district employ, and will receive his salary from a source financially independent of the Government of India, it will be necessary, under Sections 2 (*i*) and 46 (*a*) of the Civil Leave Code, that one-fifth of his total salary shall be paid to the Government of India, if he is to retain a claim to pension and absentee allowances

other than during privilege leave. In order, then, that the Extra Assistant Commissioner may receive Rs. 250 per mensem, his total salary would have to be fixed at Rs. 312-8-0 per mensem. If the pay of the Extra Assistant Commissioner were under any circumstances to exceed the Rs. 250, the same proportion would have to be observed. If this be possible, the Financial Commissioner thinks that the officer deputed to these canals should be given a position in the general line of Extra Assistant Commissioners.

3. Mr. Lyall considers that the general district funds should contribute some small proportion of the pay of the Extra Assistant Commissioner, as part of his duty will be in connection with the roads and bridges of the district generally.

4. With reference to Major Grey's proposal to raise Rs. 3,000 per annum as a general reserve fund, I am directed to state that Mr. Lyall understands that this sum is to be used for new heads and for other extraordinary works on the existing canals, and not for making new canals or extensions of old canals, in which the old irrigators, who contribute to the fund, are not interested; so understood, the Financial Commissioner thinks the levy of this Rs. 3,000 is justifiable and expedient. If experience shows that so much is not required, the sum can be reduced; but Mr. Lyall does not at all expect that this will be the case. At present the making of new heads and work at the heads generally is paid for in cash levied by the tahsildars on the villages, so that there is really nothing new in the levy of the Rs. 3,000 except that it forms a general fund for these canals.

No. 266, dated Simla, 5th May 1881.

From—The Hon'ble C. Grant, c. s., Offg. Secretary to Govt. of India, Home, Revenue and Agricultural Dept.,
To—The Secretary to Government, Punjab.

I am directed to acknowledge the receipt of your letter No. 290, dated the 12th March last, and enclosures, regarding the inundation canals of the Ferozopore District, and in reply to communicate the following remarks.

2. In the Punjab Administration Report for the year 1874-75, these irrigation works from the Sutlej in the Ferozepore District are described as comprising 10 canals, constructed for an aggregate length of 213 miles with a capacity for watering an area of 1,00,000 acres. Their construction is due to the energy of Major Grey, the Deputy Commissioner of the district, and they have been the means of conferring immense benefit on a dry tract of country. Apart from the voluntary labor given, in accordance with local custom, for the periodical clearances of the canals, it appears that the only charge hitherto levied upon the villages benefiting by this irrigation has been a cess of 6 pies per acre for patwaris' and mirábs' fees.

The whole work of construction was accomplished without any expense to the State, by district establishments, with the aid of a surveyor subsidized by the district fund.

3. It is satisfactorily shown that the supervision of these works cannot be effectually carried out by the ordinary district establishments, and it is proposed to entertain a special staff for this purpose, consisting of an Extra Assistant Commissioner, 2 Naib Tahsildars, 2 Moharrirs and 12 Peons, throughout the year, together with 20 watchmen to guard the embankments during the flood season. This establishment, with contingencies and an annual contribution of Rs. 3,000 to form a canal fund, is expected to cost Rs. 7,600 per annum plus Rs. 1,770 to be paid by the Mamdot State on account of half the cost of the Extra Assistant Commissioner's pay and allowances.

4. His Honor the Lieutenant-Governor proposes to meet the expenditure by the imposition of a cess at a low average rate, not exceeding 2¼ annas per acre, to be levied, under executive orders, on the area irrigated yearly by the canals. In many parts of India such an arrangement would probably be found difficult to carry out. Admitting the need of the establishment, the ordinary procedure would be for the Local Government, in the first instance, to take

measures to legalize the levy of the cess, and then, after crediting its proceeds to the public revenues, to appoint and pay the establishment to be employed on the canals.

5. His Honor, however, desires to introduce the new scheme before the canals begin to flow in the present year, and asks that early orders may be passed on his proposals. In these circumstances I am to convey the sanction of the Governor-General in Council to the making of the proposed charge for water supplied from the canals; but I am at the same time to point out that this charge cannot be called a cess, or enforced as such, so long as it is not levied under legislative sanction. I am therefore to suggest for the Lieutenant-Governor's consideration, the propriety of adopting the regular procedure both in the case of the Ferozepore District and in any other cases, such as that of the Peshawar District, wherein arrangements more or less resembling those here under consideration are in force or may be introduced hereafter. It was directed in the circular of the Department of Revenue, Agriculture and Commerce No. 5-790-8, dated the 22nd August 1872, that no new cess or tax, not distinctly authorized by a specific law, should be levied in any shape without previous reference to the Government of India, and the Governor General in Council is now of opinion that no cesses or taxes should be levied even with the concurrence of the people, except under some formal sanction than it is within the province of the executive Government to accord. It therefore appears that legislation in some form will be necessary, if the canals under notice cannot be brought under Act VIII. of 1873.

6. I am to add that the sum of Rs. 250 was probably entered in your letter as the amount of the pensionary contribution of the Extra Assistant Commissioner in order to express the total proceeds of the proposed cess in round numbers. The exact figure should apparently be Rs. 375, not Rs. 250, thus:—

Monthly addition to Extra Assistant Commissioner's salary ...	62	8	0
Deduct one-half paid by Mamdot State ...	31	4	0

Residue Rs. 31—4 × 12=Rs. 375 per annum.

The amount of the contribution from Mamdot would also be proportionately increased.

No. 591, dated Lahore, 30th May 1881.

From—W. M. YOUNG, Esquire, Secretary to Government, Punjab.

To—The Secretary to Financial Commissioner, Punjab.

WITH reference to the correspondence ending with your letter No. 48 S., of the 15th January last, on the subject of the future management of the inundation canals of the Ferozepore District, I am desired to forward copy of letter No. 266, of the 5th May, from the Secretary to the Government of India, Home, Revenue and Agricultural Department, and to state that the sanction conveyed in para. 5 may be acted on, and the rate or cess be levied on the irrigated area from the present summer in anticipation of the result of the action which will be taken on the separate letter which will be addressed to you this day.

2. In regard to the position which Babu Maya Das will hold on his transfer to these canals, I am directed to state that the Hon'ble the Lieutenant-Governor is of opinion that the course which will be fairest and best will be to appoint Maya Das to *officiate* as an Extra Assistant Commissioner, retaining, while so officiating, a lien on his appointment as Tahsildar. But, as he will draw his pay entirely from another source, the whole of his salary as Tahsildar will be available for his *locum tenens*; he will be seconded as an Officiating Extra Assistant Commissioner and placed at the bottom of the present list, moving up as vacancies occur above him, and when his turn comes to be placed on the permanent list he can be confirmed as an Extra Assistant Commissioner, still continuing a supernumerary, as drawing his salary from another source. This arrangement, while bringing Maya Das on to the establishment in which it is

desired to place him, will be fair to other persons whose claims would be somewhat overlooked were he to be appointed a *permanent* Extra Assistant Commissioner in the first instance.

3. The necessary notification will be published in the *Gazette* as soon as the date on which Maya Das assumed charge of his duties is reported.

No. 592.

Copy forwarded to Accountant-General, Punjab.

No. 593, dated Lahore, 30th May 1881.

From—W. M. YOUNG, Esquire, Secretary to Government, Punjab,
To—The Secretary to Financial Commissioner, Punjab.

IN continuation of my letter No. 591, of to-day's date, forwarding copy of a letter No. 266, of 5th May, from the Government of India on the subject of a cess to be leived on the area irrigated by the Ferozepore inundation canals, I am desired to request that the Financial Commissioner will favour the Lieutenant-Governor with his opinion regarding the suggestion that it will be necessary either to bring the Ferozepore canals under Act VIII. of 1873, or else to make a special enactment for them and other similar canals in order to legalise and enforce the collections of the water-rate.

2. The Lieutenant-Governor will be glad to see the report contain information as to the practice of the levy of water-rates in all cases where these are taken as part of district arrangements. It is believed that besides Peshawar, water-rates are levied in other frontier districts and possibly elsewhere, and it is desirable that the report should deal with all instances in the Province together.

No. 271—2968, dated 16th September 1882.

From—B. H. BADEN-POWELL, Esq., Commissioner and Superintendent, Lahore Division,
To—The Senior Secretary to Financial Commissioner, Punjab.

I HAVE the honor to acknowledge the receipt of your letter No. 6258, dated the 14th ultimo, enquiring why the Zar-i-nagha system which prevails in the Multan and Muzaffargarh Districts cannot be introduced on the Ferozepore canals, and in reply to forward a copy of communication No. 382 of the 9th instant, from the Deputy Commissioner Ferozepore, on the subject.

2. I agree with the Deputy Commissioner. The chief point seems to be that under the Ferozepore system the irrigators have the advantage that, if they have not cash ready to pay for silt clearing, they can give their labor, *i. e.* do the work themselves, while under the other plan they must always find cash.

Copy of a letter No. 382, dated 9th September 1882.

From—G. SMYTH, Esq., Deputy Commissioner, Ferozepore.
To—The Commissioner and Superintendent, Lahore Division.

With reference to your No. $\frac{437}{2735}$, dated 31st ultimo, forwarding for information, guidance and report, copy of letter No. 6258, dated 14th idem, from the Senior Secretary to the Financial Commissioner, asking why the Zar-i-nagha system which prevails in the Multan and Muzaffargarh District, cannot be introduced on the Ferozepore canals, I have the honor to report that the system in force in this district differs very little from the Zar-i-nagha system.

In this district soon after the highest floods, the area irrigated is measured by the patwari, in presence of the Mirab, the lambardar of the village, and the abnoshes themselves, the Mirab being the person in charge of the distribution of the water, and being always one of the leading zamindars of the neighbourhood.

When the canals cease to run the canal officials go out and measure up the quantity of silt deposited, which must be cleared off to enable the canals to

run the following year. When the work of clearance is of any importance it is always surveyed, designed and estimated. Then in the month of December a meeting is held at which the Deputy Commissioner presides, at which all the abnoshes are invited to attend. At this meeting the previous year's accounts are read out. The abnoshes are allowed an opportunity of speaking if they have anything to say. The area irrigated and the quantity of silt to be removed is announced, and the work of removing the latter is allotted to the abnoshes in proportion to the area irrigated,

The abnoshes then have the choice of either clearing away their share of the silt themselves or of paying others to do so for them. The latter course is frequently resorted to, as the silt is usually greatest at the head of a canal and the area irrigated greatest near the tail. Many villages at the head of a canal sometimes make as much as Rs. 1,000 in a cold season by clearing away the silt for the irrigators.

The only difference between this and the Zar-i-nagah system is that in the latter the work is done by the Canal establishment, the cost being collected from the irrigators, whereas in the system prevailing in this district the irrigators make their own arrangements,

The system in force in this district appears on the whole to suit the people, and it has the advantages of saving the irrigators money, as they can always make their own arrangements more economically than the Canal Department, for if the work were left to the latter, the subordinate officials would be tempted to frame high estimates so as to be able to secure some of the money for themselves..

The work allotted is estimated on the area irrigated during the previous season, except of course in the case of a new branch being opened to villages where no previous irrigation existed.

When the allotment is made the Canal Darogah, the Mirab and Lambardars of the village call upon the irrigators to perform the work allotted to them within a certain time.

If an irrigator does not wish to work himself he is obliged to name a contracter to do the work for him and to pay up the value. The contractor then becomes responsible to the Canal officials. In this there appears to be no more compulsion than in the "Zar-i-nagha" system, and moreover the persons who call upon the irrigator to do his share are for the most part zamindars like the irrigator himself and persons residing in his own village or the neighbourhood.

No. 9110, dated 20th December 1882

From—The Secretary to Financial Commissioner, Punjab,

To—The Commissioner and Superintendent, Lahore Division.

I AM directed to acknowledge the receipt of your letter No. 371/2968 of 16th September, reporting on the system under which the Ferozepore canals are maintained and to communicate the following remarks by the Financial Commissioner.

2. Mr. Lyall observes that the Wajib-ul-arz or agreement entered into by the Zamindars of the irrigating villages, which forms Appendix No. VII of Major Grey's printed report, states that the irrigators will either do the Dak or *quotum* of work allowed, or will pay the Tahsildar money with which to have it done by free labor at the rate of 8 annas for each day's work of a cher or excavator required to complete it. From another paper Mr. Lyall finds that such a day's labor is held to represent 100 cubic feet of excavation, so he understands that the Tahsildar under the Wajib-ul-arz can demand payment for allotted work uncompleted at 8 annas per 100 cubic feet.

3. The system of insisting on a man's providing a contract or, to which the Deputy Commissioner refers, has, the Financial Commissioner supposes, been substituted for cash payment to the Tahsildar since the Wajib-ul-arz was written by order of the Deputy Commissioner to relieve the Tahsildars and Naib Tahsildars and to prevent their having to collect and expend money. The system is not a bad one and differs but little from the Mooltan system, which by the by you and the Deputy Commissioner seem not to fully understand.

4. The Financial Commissioner does not wish to interfere in any way, but some of the complaints which have at various times been received from the Ferozepore District on the subject, seem to indicate that people have occasionally been forcibly compelled to do labor, and that moreover in some of these cases the people so compelled have been not the persons primarily benefitted by and responsible for the work, but other persons who though perhaps tenants or village artizans or day laborers, and in some sense dependents of the persons responsible, are yet not bound to do labor for them on such works by any law, agreement or custom. It is mainly in this respect that the Financial Commissioner doubts whether the management of the Ferozepore Inundation canals does not compare very unfavorably with that of those in Mooltan and Muzaffargarh. In the latter district no one is ever forced to work, and the responsibility for cher labor, or in default for Zar-i-nagha, is well understood. For land which the proprietor himself cultivates he is responsible and does the work himself or by free labor substituted paid at full current rates of wages. For land which is cultivated by a tenant the proprietor is still liable, unless, as is generally the case, it is one of the conditions upon which the tenant holds and in reference to which the rate of his rent has been fixed that he shall do the cher labor.

5. Mr. Lyall requests the Deputy Commissioner will take care that neither the officials nor proprietors are allowed to force any person to work against their will.

No. 1263-9109, dated 4th December 1882.

From—Secretary to Financial Commissioner, Punjab,

To—The Junior Secretary to Government, Punjab.

To Commissioner, Lahore, No. 403 S of 2nd June.
From Commissioner, Lahore, $\frac{212}{2516}$ of 26th July.
To Commissioner, Lahore, No. 625 S of 14th August.
From Commissioner, Lahore, No. $\frac{271}{2968}$ of 16th September.
Copy of this office, No. 9110 of 4-12-82. to Commissioner, Lahore.

As requested in para. 1 of your No. 435 of 9th October, I am directed to submit for the information of His Honor the Lieutenant Governor the correspondence noted on the margin, and to state that Mr. Lyall remarks that no further orders are at present necessary.

No. 31, dated 2nd May 1883.

From—T. G. Walker, Esqr., Officiating Under-Secretary to Government, Punjab,

To—The Senior Secretary to Financial Commissioner, Punjab.

Returns herewith, after perusal by the Lieutenant Governor, the correspondence submitted with his letter No. 1263, dated 4th December last, on the subject of clearance labour on the Ferozepore Inundation canals.

2. His Honor agrees with Mr. Lyall that no orders are at present needed in the case.

No. 670—5096-97, dated 7th July 1882.

From—The Senior Secretary to Financial Commissioner, Punjab,

To—The Secretary to Governments, Puujab.

I am directed to acknowledge the receipt of your letter No. 157 of 19th June, and with reference to para. 4 of the enclosure of that letter to forward in original a letter from the Commissioner of Hissar, No. 18 of 9th February, with its enclosures.

No. 5097, dated 7th July 1882.

From—The Senior Secretary to Financial Commissioner, Punjab,

To—The Settlement Commissioner.

Copy of above and of Secretary to Government No. 157 of 19th June, and enclosure, to Settlement Commissioner, for information.

Extract paras. 2 A to 5 of a letter dated 28th August 1882, from the Financial Commissioner, Punjab.

2A. I would begin by explaining Mr. Lyall has kept this letter pending as he has been expecting daily for the last three or four months to get orders as to the assessment of Hetar circle, and he could not deal with the Commissioner's proposals regarding Inundation Canal Works properly till he knew if the assessments in the Hetar of flooded lands were to be fluctuating or not.

3. Now that it has been decided that all flooded lands will have a fluctuating assessment, it is in Mr. Lyall's opinion most desirable and advisable that the Padi nalla should be converted into a regular Inundation Canal with as little delay as possible. If this can be done successfully the cultivation of the tract and the prosperity of the lands will be very largely increased and the revenue will increase in proportion. One of the reasons which induced the Financial Commissioner to persist in recommending a fluctuating assessment of this tract was the conviction that without strong and constant assistance from Government and its offcers no system of improving the river inundations was likely to be successfully introduced and maintained; and he did not see how with fixed assessments such strong and constant assistance was to be expected. Mr. Lyall observes that His Honor the Lieutenant-Governor appears to consider that the only assistance necessary will be to have levels taken, and canal projects prepared in outline, thereafter leaving the Civil Agency to induce the people to combine to make and work the canals on the Ferozepore system. Mr. Lyall ventures to think that with fluctuating assessments the people of the Hetar will expect Government to do more, and that it will be only fair that Government should do more; he thinks they will expect Government to bear at least half the cost of making and maintaining the canal; he also thinks that the people of this tract have not the same energy and power of combination that the villages in Ferozepore have, where the canals have been made and are maintained by the irrigating villages.

The part of Ferozepore irrigated by Inundation Canals which adjoins Fazilka is the Mamdot estate. The canals in that estate were made, Mr. Lyall believes, at the expense of the Nawab, and are maintained by him. The Nawab levies in return a water rate which used to be 8 annas per ghumao. If Mr. Lyall remembers right, the land revenue is fixed, so the only immediate return to the Nawab (except when he is also owner of the land) is the water rate. In that part of Ferozepore which is above Mamdot, the villages (mostly owned by Jats) have paid for the making and maintenance of the Inundation Canals, and as the land revenue is fixed, they have derived the whole benefit from them. The land revenue assessment of most of the villages to which these Canals have been extended is of course exceedingly light upon their present assets.

The Financial Commissioner thinks it will be seen that the circumstances of the case in the Fazilka Hetar and the upper part of Ferozepore are very different.

4. The Financial Commissioner begs to suggest that the Commissioner Hissar's letter No. 18 and its enclosures, be also sent to the Irrigation Department, and that for the present till the Irrigation Department report is received the question be left open whether the necessary works to turn the Padi nalla into an irrigation canal shall not be carried out at Government expense. Supposing the work to be feasible and not very expensive, Mr. Lyall's present opinion is that Government might bear the whole expense of making and maintaining the head and the upper part of the main channel, leaving it to the irrigating villages to combine and clear out the rest of the main channel and the minor distributions. If Government would undertake the responsibility for so much as Mr. Lyall suggests, he thinks the zamindars would easily be induced to combine and arrange for the rest of the work. But if the Civil Officers are told to ask the people to combine and make and maintain the Canals solely at their own expense, Mr. Lyall feels sure they will get a refusal.

No. 13, dated Hissar, 16th January 1883.

From—Lieut.-Colonel L. J. H. Grey, c. s. i., Commissioner and Superintendent, Hissar Division,
To—The Junior Secretary to Government, Punjab.

Your No. 316 S., dated 20th September 1882, paragraph 2, contemplates the construction of useful irrigation works, not necessarily as famine relief works, but for protection from famine. Deputy Commissioners are directed to consider and report on such, but not without permission induce villagers to combine to make them.

2. I have for many years been cognizant of an excellent scheme for the irrigation of Fazika, and indeed had levels run over it in 1876. Then, however, the interests of Fazilka did not of course concern me. But this is not one of the works which you refer to which may do more harm than good or may prejudice permanent works.

3. If therefore, the Deputy Commissioner of Sirsa and people of Fazilka desire to undertake soch a work, I ask discretion to sanction it and to assist them. I forward for information copy of demi-official letter written to Deputy Commissioner Sirsa, before I had read your letter above quoted. Had I then seen those orders I should of course have made this reference before writing to Deputy Commissioner, but pressing questions in Rohtak and heavy judicial work have only permitted of my gradual reading up the office files.

4. Not only is this Fazika canal perfectly feasible and of certain great profit, but I am much inclined to the opinion from enquiries I have made, that the failure in Sirsa itself, called the Sikandarpur canal, can easily be made into a success. Apparently the alignment and design were faulty, being the work of an ordinary district overseer, and, as I am informed, after Maulvi Karim-ud-din, the able Tahsildar of Sirsa, was transferred to Gohana, no zemindars took the pains to keep the channel cleared, which, faulty as it was, did work to a certain extent.

5. I ask a discretion to take up this matter also if the Deputy Commissioner and the people of Sirsa desire it. I should probably find it necessary to make takavi grants within my power, as the Sirsa district funds are too poor to assist. It might even be necessary to ask Government for the advances offered iu paragraph 2 of your letter above quoted. There would be no question regarding these advances being recovered from the Fazilka work. Of the Ghaggar work I can say nothing till I have seen it and till it has been levelled, but probably if it were put in working order by judicious aid from Government, the advances formerly made which have been remitted might eventually be recovered.

Demi-official letter dated 2nd January 1883.

From—Lieut-Colonel L. J. H. Grey, c. s. i., Commissioner and Superintendent, Hissar Division,
To—The Deputy Commissioner, Sirsa.

I see from the file that you are still inquiring about an extension of the Mamdot canals.

I designed these to supply the amount of water required by the estate, and there is none to spare, so extension is out of the question, except in a single case.

In the extreme south of the estate is a little channel taken out for only some half dozen chaks on the Fazilka border and discharging only the 70 cubic feet per second required by them. This is the Buggawah, and this might be converted into a canal discharging 500 cubic feet and extending to the Bahawalpur border, without affecting the Mamdot interests in the least.

So long as the alignment and gradient are not changed a canal may be deepened and widened to any extent, but its flood-level remains as before, and consequently the supply of all distributaries existing thereon remains unaffected.

Thus it is absolutely immaterial to the Mamdot estate what Fazilka may do in improvement of Buggawah so long as alignment and gradient remain as at present. Ferozepore therefore can agree without prejudice, and will doubtless do so.

If therefore the Vattoos have the energy to do what the Dogars and Nipals and Jats of Ferozepore did under my direction, I can put them in the way of irrigating Fazilka.

If so, the following materials are required for the scheme :—

1. The consent of Ferozepore to the use by Fazilka of the Buggawah under the proviso that existing irrigation arrangements on that canal are not disturbed.

2. The loan from Ferozepore of Roshan Das, overseer, who understands my system, and whom I can fairly trust. Smyth will require you to pay him and his establishment for the time he is lent, and you might give a bonus of Rs. 100 or so for the job.

3. The following books and papers :—

(1). Printed copy of Great Trigonometrical Stations and Level. A copy of this was supplied to each district. If you cannot find yours, that of Ferozepore was in constant use by me, and you might borrow it.

(2.) My Ferozepore Canal Report of 1876 containing all my formula and other data. I think a copy may have been sent to Sirsa. If not, you might apply to the Financial Commissioner's office, and borrow a copy from Smyth meanwhile.

(3.) A copy of Ferozepore Vernacular Wajib-ul-arz of canals.

4 You should ask Smyth to send with Roshan Das a good level, staves, chains and necessaries generally, including section paper, tracing cloth, parallel ruler, &c. Babu Mya Das, Extra Assistant Commissioner, will furnish all complete if asked to.

5. Some intelligent and conciliatory official must accompany Roshan Das, who is very quarrelsome and impatient through professional zeal. The main thing is to have survey pegs ready, and to ensure that these as laid down are entrusted to the lambardars through whose boundaries the line passes, whose business it will be to protect them from cattle and mischievous lads by covering them with thorns.

If these necessaries are provided and the Vattoos are prepared to gird up their loins and do something for themselves, the survey might be put in hand, and I would be at Fazilka in the beginning of March to go over the ground and design the work, which might well be ready in time for the August floods.

If the Vattos have not this in them, the work might be designed and lie by as a famine work. If so executed, they should have to pay liberally for the water at the rates I fixed for the Mamdot people *other* than the tenants of the estate.

As I suppose the eventual attachment of Fazilka to Ferozepore is probable there ought to be no difficulty in obtaining the co-operation of the latter.

I attach instructions for Roshan Das on which he can go to work, as soon as you can obtain the loan of his services.

If you could borrow from Ferozepore Gholam Mohi-ud-din (junior), the Superintendent of Mamdot Canals, for a week, to pick a line to be surveyed by Roshan Das, it would be very advantageous. He has excellent judgment and a capital eye for country, and has learnt all I could teach him. Roshan Das, though an admirable surveyor, has none of the above qualifications.

You could not do better than forward this in original to Smyth if you propose entering on the matters. I am sending a copy to Minchin.

P. S.—I am told that the secret of failure of the Ghaggar canal scheme is not error of principle but by faulty alignment and design. If so, it might be worth while to have Roshan Das' level run over it when he has done with the other job, and possibly it might be put right.

I think I see my way to reorganizing the Sahibi nullah floods here.

Memo. for Survey of Fazilwah.

BUGGAWAH line to be carried on towards Fazilka seeking ground nearly the same level as present *P. B.*—say one or two feet higher with fall of six inches a mile. The line should get on to the first "Dunda" as soon as possible, I suppose, about Bihal; and it can probably be carried to the second "Dunda" below Jandwala Great Trigonometrical station on to which the line must be tied. Of course it must be tied to the Ladhuwala and Fazilka Great Trigonometrical stations on the way and offset taken to that at Karaikhera.

The local knowledge of the zaildars and lambardars must be utilized; high banked depressions utilized where possible and irrigating crests followed.

If Buggawah head has gone wrong, a new head should be sought out about Middeh.

No. 115 C / 163 A., dated 9th February 1883.

From—C. L. TUPPER, Esquire, Junior Secretary to Government, Punjab,

To—The Commissioner and Superintendent, Hissar Division.

I AM directed to acknowledge the receipt of your letter No. 13 of the 16th January, in which you ask for permission to sanction and assist in the undertaking of irrigation works in the Fazilka tahsil, and also in connection with the Sikandarwah canal in the Sirsa district if this is desired by the people.

Proceedings, January 1883, No. 2A, Irrigation.

2. In reply, I am desired to forward for your information a copy of the letters marginally noted, from which it will be seen that Mr. Palmer has been deputed to examine the bed of the Ghaggar and the capabilities of the Fazilka tahsil for irrigation, and that detailed instructions have been issued to him as regards the work which he has in hand. The Lieutenant-Governor therefore considers that before any works are actually undertaken, Mr. Palmer must be allowed time to examine the country and to come to a conclusion as to the best course to adopt, and His Honor will prefer that you should await the result of his enquiries before starting any work for the levelling or construction of the proposed canals, as this course will doubtless conduce both to the efficiency of the work and in the end to economy. When once Mr. Palmer has decided what the best course for adoption is, there will be no objection to your arranging with him to start any work which may be considered advantageous, and to your carrying them out through the agency proposed in your demi-official letter of 2nd January to the Deputy Commissioner of Sirsa.

3. The Lieutenant-Governor, however, observes that the deputatoin to Mr. Palmer has taken place somewhat later than was originally anticipated in this Department. If Mr. Palmer's surveyors have already begun work in the Hithar tracts of Fazilka, it will probably be best that they should finish what they are about under his orders. If, on the other hand, this is not the case, and it is not probable that the survey of these tracts if commenced now could be completed during the present cold season, His Honor would have no objection to your arranging with Mr. Palmer that he should confine himself to the Ghaggar project, and leave the Fazilka work in your hands, more particularly as this arrangement could be carried out, as proposed by you, by means of the establishment of the Ferozepore Inundation Canals.

4. I am to add that a copy of this letter has been forwarded to the Joint-Secretary to Government, Department Public Works, Irrigation Branch, for communication to Mr. Palmer.

No. 161 C. / 163 B., dated 9th February 1883.

From—C. L. TUPPER, Esquire, Junior Secretary to Government, Punjab,

To—The Junior Secretary to Government, Punjab, Public Works Department, Irrigation Branch.

Commissioner Hissar's No. 13, dated 16th January 1883.
This office No. 115-C., dated 9th February 1883.

IN continuation of my letter No. 4-51 of 11th January, I am directed to forward for your information a copy of the letters marginally noted and to request that the directions of the Lieutenant-Governor may be communicated to Mr. Palmer and that that offi-

cer may be desired to report whether he can complete the examination of the Fazilka tahsil as well as of the Ghaggar during the present cold whether.

No. 117 C./163 C, dated 9th February 1883.

COPY of the above and of Proceedings, Revenue (Irrigation) No 2A. for January 1883, forwarded to Senior Secretary to the Financial Commissioner Punjab, in continuation of this Government letter No. 57, dated 4th September last.

No. 165, dated Lahore, the 6th February 1883.

From.—F. C. CHANNING, Esquire, Senior Secretary to Financial Commissioner, Punjab,

To—The Junior Secretary to Government, Punjab.

IN your letter No. 54 of 4th August last, it was intimated that Mr. E. C. Palmer of the Irrigation Department would on return from furlough be deputed to examine the Sutlej alluvial tract in the Sirsa district, with a view to developing canal irrigation, and also to report on the question of the irrigation from the Ghaggar, in the Sirsa district, as connected with the proposal to construct a bar or bars to prevent erosion of the bed.

2. I am now directed to forward, in original, a letter from Lieutenant-Colonel Grey, Officiating Commissioner of Hissar, No. 19 of 27th January, for the orders of His Honor the Lieutenant-Governor. It will be seen that Colonel Grey is anxious himself to take in hand the scheme for converting the Padi nullah into an inundation canal, and wishes the orders, directing Mr. E. C. Palmer to survey and report on this scheme, to be cancelled. The Financial Commissioner has no objection to make to these orders being cancelled if His Honor the Lieutenant-Governor, after reading Colonel Grey's letter, thinks that the Padi nullah project can be managed by Colonel Grey in the way he proposes ; on the other hand, Mr. Palmer's opinion on the scheme would probably in any case be valuable.

3. As Colonel Grey presses for early orders, Mr. Lyall hopes that you may be able to give him an immediate reply direct. Mr. Lyall has replied to a telegram received from Colonel Grey to the effect that Mr. Palmer may be asked to first deal with the matters connected with the Ghaggar bar before going to Fazilka, but that the Financial Commissioner cannot of course on his own authority tell Mr. Palmer that he need not got to Fazilka.

4. If Colonel Grey's proposal is approved, it will be necessaay to make him the advance of Rs. 5,000 for which he asks in paragraph 6 of his letter.

5. My No. 166 of this date refers to the scheme on which Colonel Grey proposes to employ Mr. Palmer.

No. 19, dated Hissar, the 2nd Janury 1883.

From—Lieut-Colonel H. GREY, C.S.I., Commissioner and Superintendent, Hissar Division,

To—The Secretary to Financial Commissioner, Punjab.

WITH reference to your No. 6539, dated 24th August 1882, I have already written to say* that the services of Mr. Palmer might with advantage be diverted to the design and estimate of works required for the Ghaggar floods, and that I am prepared to undertake the engineering of an inundation canal in Fazilka.

*No. 17, dated 27th January 1883.

2. On this head I have already addressed to Secretary, Punjab Government, a letter, with enclosures, copy of which I herewith forward. I trust the Financial Commissioner will excuse my error in addressing the Punjab Government direct, which was caused by my being new to the office of Commissioner.

I shall shortly proceed to Fazilka to inspect the ground, with the capabilities of which I am however already acquainted. Before doing this, I ask Financial Commissioner's support to the proposals hereinafter detailed.

3. Evidently, I cannot now undertake the actual superintendence of engineering works as I did in Ferozepore. What I can do is to direct and check the survey; to examine and select from the various lines surveyed; to design the work on the survey selected; to direct the preparation of and check the specification and estimate; and to examine and pass the work when finished.

4. To carry out my instructions and to superintend the works, I require competent assistance, and of course a competent survey establishment.

For this purpose I shall require :—

1. A Superintendent of Works.
2. A Surveyor with tindal, 6 khalasis, dumpy-level, staves, chain, pins, section paper, and office requisites generally.

I propose to borrow these from Ferozepore or Bahawalpur.

I should wish, if they will agree, to secure the services for 6 months of Gholam Mohi-ud-din, junior Superintendent of Mamdot Canals, on Rs. 150 per mensem, and of Roshan Das, Ferozepure Surveyor, on Rs. 100 per mensem and mileage, with his khalasis, &c., on their actual pay. Both these men thoroughly nnderstand my method, and they could, I think, be spared from Ferozepore for 6 months or so. After completion of the work they might revert to their appointments, and for the future they might be subsidized by Fazilka, or other arrangements made independently of them.

5. Supposing that I could not obtain the services of these men, I could doubtless obtain what I require from Bahawalpur.

6. What I propose, then, is that Government should make a first contribution of Rs. 5,000 to a work in which, under the system of fluctuating assessments, it is jointly interested with the zemindars of Fazilka.

7. That this sum should be placed at my disposal, to be expended as I consider necessary in entertaining establishment and paying for work at the head of the canal. When I submit a regular estimate, the Government might make a further grant, bringing up its total contribution to such a share of the total cost as it considers just. The remainder of the work not thus paid for by Government will be executed either by the personal labor of the zemindars or by takavi grants made to them. I entertain no doubt whatever that Mr. Trafford and myself will succeed in inducing them to agree to this, for they have been for years hankering after similar irrigation to that which they see in Mamdot.

8. If my proposal is accepted, I beg that I may be informed by wire, so that no delay may occur in making the necessary preliminary arrangements; also that the Rs. 5,000, which I ask for, be placed at my disposal within the shortest delay possible.

No. 263, dated Lahore, the 28th February 1883.

From—F. C. CHANNING, Esquire, Senior Secretary to Financial Commissioner, Punjab,
To—The Junior Secretary to Government, Punjab,

IN continuation of my No. 165 of 6th February, I am directed to submit in original a letter from the Commissioner of Hissar, dated 24th February, and to ask for very early orders.

2. It will be seen that Colonel Grey says he has two schemes: the (1) conversion of the Padi into a regular inundation canal for irrigation of the Hitar or Khadir circle; (2) the making of a canal to irrigate the Utar or circle behind the Hitar. The first he says is very simple. Mr. Lyall has no doubt that it is, and that Colonel Grey is right in thinking that if work is started at once water will be available for next kharif, and the Financial Commissioner agrees that there is no doubt but that Government should contribute a share to the original cost of this work: he thinks it should also contribute to the subsequent cost of maintenance. Mr. Lyall's reasons for these opinions have been explained in former correspondence. He thinks Government may safely telegraph to

Colonel Grey promising the required aid to the extent of Rs. 2,000 which he asks for, and telling him to put the work in hand at once in the way he proposes.

3. As to the second scheme, Mr. Lyall recommends that Colonel Grey be told not to attempt to put it in hand now and to submit a full report. The Utar country, for which this canal is designed, is under a very light fixed assessment. If canal water is brought to it the cultivation will be immensely increased and improved, and the land revenue demand will remain as it is for next 30 years. Colonel Grey does not say whether any water rate will be charged; the Financial Commissioner imagines that he does not contemplate imposition of a rate. If this is so, Mr. Lyall doubts the policy of this. We should have the Utar chak lying between on the east the lands irrigated by tail of Sirhind canal and on the west the lands irrigated by the Padi or Fazilwah. The lands on both sides would be paying for the water more or less heavily, that in centre might be paying next to nothing. Mr. Lyall also thinks that the arrangements made with Mamdot regarding extension of the Buggawah and its conversion into the Mobarakwah ought to be examined before the work is taken in hand.

Dated Camp *viâ* Fazilka, the 24th February 1883.

From—Lieutenant-Colonel H. GREY, C. S. I., Officiating Commissioner and Superintendent, Hissar Division,

To—The Secretary to Financial Commissioner, Punjab.

WITH reference to paragraph 3 of Secretary to Government, Punjab's No. 115 C. of 9th February 1883,* I beg to state that Mr. Palmer is fully occupied with the Ghaggar and will barely be able to dispose of that ere taking up his duties of Executive Engineer, Western Jumna Canal, at Hissar. I have therefore arranged with him to confine himself to the Ghaggar project and to leave the Fazilka work in my hands.

*"If, on the other hand, this is not the case, and it is not probable that the survey of these tracts if commenced now could be completed during the present cold season, His Honor would have no objection to your arranging with Mr. Palmer that he should confine himself to the Ghaggar project and leave the Fazilka work in your hands, more particularly as this arrangement could be carried out as proposed by you by means of the establishment of the Ferozepore Inundation Canals."

2. The Fazilka work comprises two distinct schemes—

Fazilka Inundation Canals.

(1). Canalization of an old channel called the Padi for the irrigation of the Hitar chak.

(2). Remodelling and prolongation of the Buggawah canal of Ferozepore to irrigate the Utar chak.

3. The first is a very small and simple matter, and I have found the means of feeding the Padi from a head in Ferozepore at a high level with very small expenditure of money and labor. The irrigation will be taken down to the Bahawalpur border, thus giving a total length of canal of some 22 miles and an irrigating capacity equal to 4,000 acres by flow, besides lift irrigation.

4. Much money and much labor has been wasted on this channel through ignorance of simple hydraulic rules. Channel after channel has been silted up by damming it to cause overflow, without providing a scouring discharge. These vain attempts have been made to feed lengths of these *Padi* channels by cuts taken directly from the river abreast, without any reference to the relation of river level and bed level of the channel. It is now 8 years since any real irrigation has been obtained, and the water level of such wells as exist has fallen many feet.

All however can now be easily and simply remedied and high level irrigation afforded at small outlay.

This canal will be called the "Fazilwah," and I will in future speak of it as such.

5. The other scheme, which will hereafter be known as the "Mobarakwah," is a larger affair. The Buggawah is a very small canal designed to irrigate 2,500 acres of Mamdot chaks on the Fazilka border. This it is proposed to enlarge so as to supply water also for 10,000 acres in the Fazilka Utar. Its

condition as regards the Mamdot chaks will remain absolutely the same, as explained in paragraph 3 of my memorandum of 5th May 1881, forwarded with my No. 26 of 5th instant.

6. This scheme was originally devised by me in 1876 and I then had it surveyed, but abandoned the idea as Fazilka then did not concern me. That old survey has now been re-surveyed, with certain modifications of alignment, under direction of Gholam Mohi-ud-din, Afghan, of whose remarkable ability and extraordinary aptitude, I spoke in the Ferozepore Revenue Report for 1881. He is a man of mark, and in these matters I can rely upon his judgment as my own.

7. This matter has been taken in hand by him and the Ferozepore establishment under my direction since the 3rd February (I only received Junior Secretary's No. 115 C., on the 15th February), and the survey is completed showing a most favorable and economical scheme for the Fazilka Utar irrigation. The Fazilwah survey also is in hand.

I have yet to inspect the alignment and to design the works, specifications and estimates of both the 'Mobarakwah,' and 'Fazilwah' will then be prepared and in the office of Babu Maya Das, who is now with me. The work will then be laid out on the ground and allotted in '*duks*' to the '*abnoshes*' of each canal according to irrigable area, statement of which is being prepared.

8. I find the people very keen upon this work, having full confidence as the results from what they have seen and heard of those obtained in Ferozepore.

Many details, however, remain to be settled with them, nevertheless, all will be ready and arranged so as to commence work by the 8th March at latest; and irrigation might commence before the end of June. But I first want a reply to paragraph 5 of my No. 19 of 27th January 1883.

9. Aid is, I consider, requisite for both these works. On the 'Fazilwah' it is justly due from Provincial revenue, as the Hithar chak, to be irrigated thereby, is under fluctuating assessment. I cannot, of course, say the exact amount just yet, but doubtless Rs. 2,000 (say 8 annas per acre to be irrigated by this canal) will amply cover Government's fair share of the cost of head work and distributaries.

10. To the Mobarakwah, Government should, I think, contribute, from the one-fourth District Fund Reserve in its hands, one-fourth of the total estimated cost of the work up to Rs. 5,000.

I propose to allot '*duks*' in two schedules, each village having a '*duk*' in Fazilka, to be executed by manual labor, and one in Ferozepore (the canal will be 28 miles in length, of which 11 in Ferozepore), for which I will grant *takavi* up to a total of such grants of Rs. 2,500 for this work. A certain length of the head will be excluded from these allotments as being the one-fourth to be executed with the grant-in-aid.

11. Without assistance, as claimed above, I do not think that 'Mobarakwah' can, or that 'Fazilwah' should, be executed. I am therefore loth to put either in hand till I receive intimation from you by telegraph through Okara that I may reckon on this assistance. If I receive such intimation by the 8th March this work will be put in hand under direction of Babu Maya Das and the Ferozepore establishment, and I will then detail my proposals regarding these and for the inclusion of Fazilka in the Ferozepore irrigational system. If, however, I receive no intimation by 8th March, I shall proceed on my tour towards Hissar, and the matter must remain over till next year.

No. 771 I., dated 17th February 1883.

From—Lieut.-Col. R. HOME, R. E., Joint-Secretary to Govt., Punjab, Public Works Department, Irrigation Branch,
To—The Junior Secretary to Government, Punjab.

WITH reference to the case of Mr. E. C. Palmer's deputation to the Sirsa district (ending with your No. 4, dated 11th January 1883), I am to say that in the concluding paragraph of a letter, dated Hissar, 3rd February 1883, Mr. Palmer writes that "having put myself in communication with Colonel Grey, the Commissioner of Hissar, I find he has applied to Government to be allowed to arrange for the Padi nullah question himself without the aid of professional

advice, but he regards the improvement of the Ghaggar irrigation as far more important and for that project has asked for the services of an Engineer."

I would request early intimation of any changes in the original instructions conveyed to me in your No. 156, dated 19th June 1882, on the above subject. Mr. Palmer has been much delayed in starting work owing to the faot that nearly all the available surveying appliances had already been issued from this office for use on surveys for new canals, and the stock had consequently to be supplemented by new purchases. He is now on his way to Sirsa and will probably have reached that place ere now.

2. In pursuance of the former instructions, copy of which was forwarded to you with this office No. 4538, dated 13th December 1882, Mr. Palmer has entertained a staff sufficient for the work originally contemplated; they can be dismissed at the close of any month, but evidently until the further instructions now asked for are received I am unable to inform you what the total cost of their entertainment will be.

3. If Colonel Grey's proposal to undertake the regulation of the irrigation from the Sutlej meets with approval, an immediate reduction in the temporary establishment will be made. From the plans, &c., that I have seen, the work required to be done in the Hitar tract appears to be similar in all respects to that already carried out in the Ferozepore Khadir, and there is every reason to believe that it can be carried out in a similar manner with the same agency.

4. I would invite attention to the "improvement of the Ghaggar irrigation" mentioned by Mr. Palmer as much desired by the Commissioner; from the papers furnished to me I gathered that there was no water available for any new or indeed improvement of existing irrigation from that source. The orders pointed to an uninterrupted flow to the Bikaner territory. I have therefore instructed Mr. Palmer to confine his attention strictly to the question of the prevention of further retrogression of levels of the Ghaggar bed with the object as I understand it of obviating any further loss of cultivation due to such cuts and spills as are still in existence; if I have been in error in this interpretation of the printed correspondence, I may mention that in the event of Mr. Palmer's services not being required for the Sutlej irrigation he would have leisure before the end of March (when he will have to relieve Mr. Phelan in the charge of a Division of the Western Jumna Canal) to investigate the possibilities of improving the irrigation from the Ghaggar.

5. I am to ask for the favor of early instructions as the necessity for amending or confirming the orders already given to Mr. Palmer is obvious.

Telegram, dated 4th March 1883.

From—Lahore,	To Hissar.
From—Junior Secretary,	To Commissioner,

Yours of 24th ultimo to Financial Commissioner. The Lieutenant-Governor agrees to immediate prosecution of the Fazilwah or Padi nallah project only. Baggawah or Mubarakwah project must be deferred pending further report.

No. 951-I., dated Lahore, the 5th March 1883.

From—T. Higham, Esq., Assistant Secretary to Government, Punjab, Public Works Department, Irrigation Branch,

To—The Junior Secretary to Government, Punjab.

With reference to your No. 116 C., dated 9th February 1883, enquiring whether Mr. Palmer can complete the examination of the Fazilka tahsil as well as of the Ghaggar during the present cold season, undersigned is desired to refer to the following telegram despatched by the Joint-Secretary on the 20th instant: "Your No. 116 C., dated 9th February 1883. Reply to this office 771, dated 17th February, is awaited;" and to observe that all the points mentioned in letter under reply are discussed in the letter referred to in the telegram. It may be added that in consequence of the wish expressed by the Commissioner, Hissar Division, Mr. Palmer has not yet proceeded to the Padi nullah, and has been directed for the present to confine his attention solely to the question of the erosion of the Ghaggar bed.

No. $\frac{16}{271}$, dated Lahore, 10th March 1883.

From—C. L. TUPPER, Esquire, Junior Secretary to Government, Punjab,
To—The Senior Secretary to Financial Commissioner, Punjab.

I AM desired by the Lieutenant-Governor to acknowledge the receipt of your letters No. 165, of 6th ultimo, and No. 263, dated 28th idem, on the subject of the construction of inundation canals in the Fazilka Tahsil of the Sirsa District.

2. In reply, I am directed to state that in my letter No. 115 C., of the 9th February, a copy of which has been forwarded to the Financial Commissioner, permission was given to Colonel Grey to undertake this work provided it had not been already commenced by Mr. Palmer. From a letter recently received from the Joint-Secretary to Government, Irrigation Department, and from the enclosure of your second communication under reply, it appears that Mr. Palmer has been fully occupied with the Ghaggar project and Colonel Grey has taken the Fazilka schemes in hand. The issue of further orders on this point does not therefore seem to be necessary; but I am to point out that some inconvenience has been caused by Colonel Grey's procedure in having in the first instance addressed Government on this subject directly instead of through the Financial Commissioner.

3. The Lieutenant-Governor regrets that he cannot sanction from Provincial Revenues the grant of Rs. 5,000, for which request is made in paragraph 6 of the Commissioner's letter No. 19 of the 27th January. It appears, however, that the balance of the Sirsa District Fund is at the present time Rs. 10,500, and if the District Committee wishes to spend Rs. 5,000 of this amount on the Fazilka irrigation schemes the Lieutenant-Governor is willing to sanction the adoption of this course. For the rest the local officers must rely on the personal efforts of the people in constructing the canals and such assistance as can be obtained by taccavi advances.

4. As far as the irrigation of the Padi nullah alone is concerned, the development of irrigation will, as the arrangements now stand, increase the land revenue collections made under the system of fluctuating assessment, and this may be urged as a reason for a contribution from Provincial funds, seeing that in accordance with the present financial contract the land revenue is shared between the Local and Supreme Governments. Mr. Lyall holds that Government should grant Rs. 2,000 towards the original cost of the simple project for converting the Padi nallah into an inundation canal (to be called the Fazilwah) and should also contribute towards the cost of maintenance. The former correspondence in which his reasons for this view have been explained is not cited; and paragraph 4 of your letter No. 165, dated 6th February, contains merely a recommendation without discussion for an advance of Rs. 5,000. It appears from paragraph 1 of your letter No. 100 C. S., dated 9th September 1881, that, when the Sirsa assessments were under review Mr. Lyall considered that as there was no custom of cher labour for the clearance and management of the old branches of the river in this part of the country, it was impossible to impose a system of such labour as a condition of settlement, and that the question whether the Government should itself spend money by grants limited not to exceed a certain share of the collections of fluctuating revenue, was a matter for future consideration. In the case of a small and comparatively unimportant work the Lieutenant-Governor's view is that it had better be altogether a local one, and if the District Committee and the irrigators provide the whole cost and labour both for construction and maintenance, it would only be right that the resulting benefit should subject of course to such seignorage or payments as may be fixed from time to time on account of the rights of Government set forth in the preamble of Act VIII. of 1873) be shared between the District Funds (whether allotted to a Rural Board or not) and the irrigating communities.

5. As regards the canal extension to be called the Mubarakwah) which Colonel Grey proposes to execute by enlarging and lengthening the Baggawah canal in the Ferozepore District, the question of a Government interest derived from a fluctuating system of assessment does not arise, as the Utar

tract of the Sirsa District to be irrigated by this extension is under a very light fixed demand. The Lieutenant-Governor quite agrees with the Financial Commissioner that this work must not be put in hand at present. A separate and full report is required, and the conditions subject to which it will be undertaken and the arrangements to be made with the Mamdot estate must be carefully examined and stated before beginning excavation. There is no objection, however, to the project as such being completed in detail, including the allotment of specific parts of the work to the irrigators. Unless the whole cost of construction and maintenance is borne by the villages benefited, it will clearly be necessary to reserve in addition to the rights of seignorage under the preamble to the Canal Act the power of levying a water-rate, whether such rate be payable to Government or to a Rural or District Board. If the people agree to make and maintain the extension at their own charge, the Lieutenant-Governor does not think it would be right to check their enterprise because there are lands on either side of theirs which will be differently assessed. The case of the Sirhind Canal constructed and maintained at the public expense is not parallel; while in the case of the proposed Fazilwah it would be better to waive the enhancement really due to private or local capital than to hinder a profitable investment in the Utar tract on the ground of resulting inequality.

6. The Lieutenant-Governor has sanctioned the commencement even of the smaller work with some hesitation, as he considers that in the long run it will always be found better to carefully mature such projects beforehand. Colonel Grey, however, has special experience of kindred schemes, and the Lieutenant-Governor hopes that in this case there will be no reason to regret the permission given. I am to ask, however, that as soon as the Commissioner and Financial Commissioner have matured their views on the suggestions made in this letter, a report may be submitted to Government, stating the conditions on which the villages have agreed to give labour, the manner in which funds have been and are to be provided, and the system proposed for future management and control. The respective rights of the irrigators, the District Committee (if it shares in the work) and the Government should be very clearly defined in the correspondence, so that the difficulties which have arisen in other parts of the Punjab may not recur here.

7. I am further to say generally that in all schemes of the kind now discussed, it should be borne in mind from the first that such works are specially suitable for administration by Local Bodies, and the expediency of ultimately making them over to such management should be kept in view. In connection with this subject the Financial Commissioner will perhaps invite the attention of the Commissioner to the arrangements made in the case of the Kotila Jhil Chak in the Gurgaon District; and the Lieutenant-Governor would be glad if in the separate reports above called for as to (1) the Mubarakwah and (2) the Fazilwah, Colonel Grey would record his views as to whether a similar plan would be likely to prove successful for the management of the proposed Sirsa canals, and, if so, on what conditions.

8. The substance of the decision conveyed in this letter has been communicated to Colonel Grey by telegraph.

No. $\frac{17}{272}$, dated Lahore, 10th March 1883.

From—C. L. Tupper, Esquire, Junior Secretary to Government, Punjab,

To—The Joint-Secretary to Government, Punjab, Public Works Department, Irrigation Branch.

I am desired to acknowledge the receipt of your letter No. 771 of 17th ultimo, on the subject of the work which Mr. Palmer has been deputed to undertake in connection with the irrigation of the Fazilka tahsil and the erosion of the Ghaggar bed, and in reply to convey the following orders and observations of the Lieutenant-Governor.

2. A communication has already been addressed to you in my letter No. 116C. of the 9th ultimo, regarding the proposed construction of the Fazilka inundation canals; and as in your opinion the work can be appropriately carried out by the same agency and in the same manner as in Ferozepore, orders have

to-day been issued by the Financial Commissioner authorizing Colonel Grey to take up the scheme independently of Mr. Palmer, whose work will now be confined to the Ghaggar. A copy of the orders* on the subject is herewith forwarded for your information, and for communication to Mr. Palmer.

*No. 16, dated 10th March 1883, to Financial Commissioner, Punjab.

3. With regard to the enquiry made in paragraph 4 of your letter under reply, I am directed to enclose a copy of the correspondence which has passed between this Department and the Financial Commissioner on the subject of the Ghaggar irrigation, and to say that the Lieutenant-Governor is averse to Mr. Palmer undertaking any new survey in connection with the diversion of the floods into the old Choya channel until the political aspect of the question has been more thoroughly examined. The instructions you have given to Mr. Palmer to confine his attention to the question of preventing further retrogression of levels are quite correct and entirely in accordance with the orders approved by Government in this office letter No. 4, dated 11th January last.

Financial Commissioner's No. 166, dated 6th February 1883.
This office No. 18, dated March 1883.

No. 52, dated 10th March 1883.

From—Lieutenant-Colonel L. J. H. Grey, c. s. i. Offg. Commissioner and Superintendent, Hissar Division,
To—The Junior Secretary to Government, Punjab.

Submits the following copy, with original extract, for sanction.

No. 70, dated 8th March 1883.

From—The Deputy Commissioner Sirsa,
To—The Commissioner and Superintenndent, Hissar Division.

Forwards copy of Resolution No. 15 relative to Mubarakwah Canal passed at a meeting of the District Committee held at Sirsa on 7th March 1883.

Extract from the proceedings of a Meeting of the Sirsa District Committee, held on the 7th March 1883 at the Municipal Town Hall, Sirsa.

15. Read application of the District Committee, Sirsa, for a grant of Rs. 5,000 for Mubarakwah Canal.

Resolved.—That as the zamindars of the Utar Chak of Tahsil Fazilka propose to construct a canal, called the Mubarakwah, for the irrigation of their lands, with their own labor, they merit grant-in-aid for this purpose from the District Fund of Rs. 5,000.

As the funds in the hands of the District Committee are not equal to affording this assistance, the Punjab Government should be asked to make this grant from the District Fund 20 per cent. contribution.

On the precedent of the Ferozepore District, where similar grants, aggregating Rs. 28,000, have at different times been made by the District Fund to assist zamindars on the excavation of canals, it is proposed that this grant of Rs. 5,000 should be free of conditions of repayment.

Resolved.—That the Punjab Government be accordingly petitioned to afford a grant-in-aid as above set forth.

No. $\frac{27}{462}$, dated 14th April 1883.

From—C. L. Tupper, Esquire, Junior Secretary to Government, Punjab,
To—The Commissioner and Superintendent, Hissar Division.

I am directed to acknowledge the receipt of your docket No. 52, dated 10th March 1883, forwarding, for sanction, an application from the District Committee of Sirsa for the grant of Rs. 5,000 from the 20 per cent. contribution paid by District Funds to Provincial revenues for the proposed Mubarakwah Canal. Your docket No. 55, dated 15th idem, submitting the plans and estimates of the project, has also been received.

2. In reply, I am to refer you to paragraph 5 of my letter No. 16, da 10 March 1833, to the Secretary to the Financial Commissioner, copy of which perhaps now reached you, stating that the Mubarakwah Canal was not to undertaken at present, and calling for a detailed report upon it, and to requ that the present application which, with the plans and estimates, is return may be re-submitted for orders with that report through the Financial Co missioner.

No. 37 C., dated Simla, 12th June 1883.

From—F. C. CHANNING Esquire, Senior Secretary to Financial Commissioner, Punjab,
To—The Junior Secretary to Government, Punjab.

IN your letter No. 16 of 10th March you referred the Financial Con missioner to a previous letter in which the permission given to the Officiatin Commissioner of Hissar to commence the canal intended to irrigate the Fazilk Hethar, and known as the Fazilwah, had been communicated to this office; yo added that His Honor the Lieutenant-Governor regretted that he was not abl to contribute from Provincial revenues the sum of Rs. 5,000 in aid of th project, for which an application had been made; but you suggested that th District Committee might be willing to give the required assistance. You nex discussed the question whether, in view of the fact that, owing to the introduc tion of the system of fluctuating assessments in the Sutlej Hethar, the Provincia Government would, under the financial arrangements in force, directly profit by the extension of irrigation, it should not directly contribute to the work by grants limited not to exceed a certain share of the collections from fluctuating revenue; and you stated that it was Sir C. Aitchison's opinion that in the case of a small and comparatively unimportant work it had better be altogether a local one, and that if the District Committee and the irrigators provided the whole cost and labor both for construction and maintenance it would be only right that the resulting benefits should (subject of course to such seigniorage or pay- ment as may be fixed from time to time on account of the rights of Government set forth in the preamble of Act VIII of 1873) be shared between the District Funds (whether allotted to a Rural Board or not) and the irrigating communities. You next asked for the submission of a full report before the canal extension intended to water the Fazilka Utar, and now known as the Mubarakwah, should be put in hand, and requested that in this report the conditions subject to which the work would be undertaken and the arrangements to be made with the Mamdot Estate should be carefully stated. You added that unless the whole cost of construction and maintenance were to be borne by the villagers benefitted, it would be clearly necessary to reserve, in addition to the rights of seigniorage, under the preamble to the Canal Act, the power of levying a wate rrate whether this were payable to Government, or to a Rural or District Board. With reference also to the Fazilwah you asked for the submission of a report stating the conditions on which the villages have agreed to give labour, the manner in which funds have been and are to be provided, and the system pro- posed for future management and control; and it was requested that the res- pective rights of Government, the District Committee (if it shared in the work) and the irrigators should be very clearly defined; and, finally, the Financial Commissioner was asked to direct Colonel Grey's attention to the arrangements made in Gurgaon in connection with the Kotila jhil, and to enquire whether a similar system would be likely to prove successful in the case of the Sirsa canals.

2. Your letter was duly communicated to Colonel Grey, and I am now directed to submit, in original, the four letters noted in the margin, with their enclosures, which have been received from him on the subject. The first two letters were written by Colonel Grey before the receipt by him of your letter of 10th March; his letter No. 101 of 20th April submits the report on the two canals, which was called for in your letter, and his No. 101 A asks for a grant of Rs. 5,000 towards the construction of the Mubarakwah.

No. 51 C. of 13th March.
" 54 of 16th March.
" 101 of 20th April.
" 101 A of 20th April.

3. Briefly stated, the arrangements made by Colonel Grey for the Fazilwah, and proposed by him for the Mubarakwah, amount to an extension to them of the system under which the Ferozepore canals were constructed and maintained. That Colonel Grey, who was the author of the Ferozepore canals, should propose the extension of this system to these two canals was, it seems to the Officiating Financial Commissioner, only to be expected, although there was no allusion to that system in your letter under reply; and when it is remembered that the Mubarakwah is an extension of a Ferozepore canal, and that proposals are now pending to constitute the tract which these canals irrigate a part of the Ferozepore District, it seems to Colonel Davies very doubtful whether it would have been wise to advocate the introduction here of a system differing from that in force in Ferozepore.

4. The leading features of the Ferozepore system are of course well known to the Punjab Government; the canals were constructed by the labor of the villages irrigated from them, assisted to a certain extent by the grants of funds voted by the District Committee; these grants were bestowed as free gifts given in aid of important works of public utility, and were not held to give the Committee any profitable interest in the canals; no water-rate is levied, but only a small rate annually distributed over the irrigated area to meet the cost of establishment; and the annual silt-clearances are effected in the same manner, as was the original construction, by the labor of the irrigators themselves, to whom allotments of so many cubic feet of excavation are made in accordance with their irrigated area. No seigniorage, such as that referred to in paragraph 4 of your letter No. 16 of 10th March, has hitherto been demanded on these or any other private canals, and as the Officiating Financial Commssioner understands the preamble of the Canal Act, the declaration therein made of the right of Government to use and control for public purposes the water of rivers, while it would empower Government to prohibit the construction of a private canal, or to permit it only on agreement to pay certain fees as seigniorage, does not confer any taxing power; nor would it empower the Government to add fresh conditions without the consent of the other party when the canal had once been constructed with the permission of Government. If this view of the law be correct, the Government could scarcely, Colonel Davies thinks, impose seigniorage for the use of the water taken from a mere extension of an already existing canal, on which no such charge had hitherto been made; nor, even assuming that the Government has legal authority to impose such a tax, would it, in his opinion, be good policy to exercise it, and thereby introduce two different systems on what will be, if the proposed extension is carried out, one and the same canal.

5. No doubt the Ferozepore system has its weak points, some of which were described in paragraphs 3 and 4 of this office letter No. 1833 of the 23rd February last, to the address of the Commissioner of Hissar, of which copies are attached to this letter for reference.

The chief defect in the system is the want of a legal power of imposing penalties for neglect or refusal to work; but, as Mr. Lyall remarked in paragraph 5 of the same letter, it is to be expected that the amended Canal Act, the preparation of which has been directed in your letter No. 32 of 3rd May, will give the powers necessary for working the system efficiently; and in the meantime the interests of the people for whose benefit one canal has been, and the second is proposed to be, constructed, are so bound up with the success of the projects that the want of this power is not likely to be felt in practice; and Colonel Davies, therefore, recommends that no attempt be made to introduce into the Fazilka Tahsil, in connection with these canals, any system different from that now in force in Ferozepore, or to insist on more onerous conditions as to the use of the water than those now existing in that district.

6. Colonel Grey reports in his letters Nos. 54 of 16th March and 101 of 20th April that the Fazilwah is a canal 26 miles in length, containing 3,22,211 cubic feet of excavation work, valued at Rs. 5,072; it is being constructed by 65 villages with a grant-in-aid from the District Fund of Rs. 1,000; this grant has been given out and out, and no water-rate will be levied. It is proposed to maintain the canal on the Ferozepore system already described; but as during the continuance of the fluctuating system of assessment the Government will

be a direct and immediate gainer by the extension of irrigation, a contribution is asked for from Government of one-and-a-half anna per acre irrigated towards the *bachh* which will be levied for the maintenance of the canal. This request is, Colonel Davies thinks, a reasonable one, and he begs to support it. As long as the fluctuating system is maintained, it will be only fair that the Government, which will so largely benefit from the extension and, at the same time, the security of cultivation which will result from this canal, should contribute towards its maintenance; and the amount of the contribution asked for, one-and-a-half annas per acre (less than one-tenth of the average rate on cultivation), appears to the Officiating Financial Commissioner to be very moderate. If the fluctuating system of assessment is at any time put an end to, as has been recently proposed by Colonel Grey, then, as stated in paragraph 4 of the Commissioner's No. 101 of 20th April, no further claim to this contribution will be made. If further argument in support of this proposal is required, I am to invite your attention to the expression of Mr. Lyall's opinion contained in paragraph 3 of this office No. 670 of 7th July 1882 to your address.

7. The proposed Mubarakwah Canal will be of a total length of 30 miles, entailing 14,359,975 cubic feet of work of a value of Rs, 23,332: of the total amount of work, the equivalent of Rs. 17,332 will be given by the 37 Fazilka villages which will be irrigated from the canal; the equivalent of Rs. 1,000 will be executed by the Mamdot State in consideration of the improvement of irrigation in certain lands formerly watered from the Buggawah, which will now be remodelled and extended; for the remaining Rs. 5,000 the Commissioner, in his No. 101 A of 20th April, supports an application of the District Committee of Sirsa for a grant of that amount from the 20 per cent. contribution paid by District Funds to Provincial Revenues. The form which it is desired that this contribution should take is that of a free gift from the District Committee, just as in the case of the Rs. 1,000 grant towards the construction of the Fazilwah. Strictly speaking, of course, the District Committee has no power to vote any such sum out of the deduction made by the Government under Section 7 of the Local Rates Act before the annual allotment to the District Fund is made. These deductions are credited to Provincial revenues under that section; but under the same section the Local Government can allot from them such sums as it thinks fit for any of the purposes specified in that section, which may be described generally as *public improvements*. Colonel Grey shows that since the Local Rate was imposed, the villages which will be irrigated from the proposed canal have contributed more than the sum asked for, and this fact, apart from the future benefits to be expected from this work to the Government and the people of this part of the district, gives them, in Colonel Davies' opinion, an equitable claim for a grant of the amount asked for.

8. What then is asked for in the case of the Mubarakwah is permission to construct the canal, and the above-noted grant of Rs. 5,000. As the revenue of the tract which it will irrigate is fixed, no contribntion towards the *maintenance* of the canal is asked for; the canal will be kept up by the irrigator just as is done in Ferozepore; and the new canal will practically be incorporated into the Ferozepore system.

Colonel Grey's proposals will, Colonel Davies hopes, be sanctioned by Government.

9. With his No. 51 C of 13th March, Colonel Grey submits a memorandum, which shows the manner in which this incorporation into the Ferozepore system will be carried out. If His Honor the Lieutenant-Governor accepts the proposal now made that both the canals shall be included in, and worked under, the Ferozepore system of canal administration, it will be easy to arrange, in communication with the Ferozepore authorities, all details of strength of additional establishment, &c., required by the inclusion of these canals in the system. The proposals made by Colonel Grey, so far as the Officiating Financial Commissioner can at present judge, seem appropriate, and they will probably be accepted by the Deputy Commissioner of Ferozepore and the Commissioner of Lahore. They apparently impose no additional burden

on Mamdot or the rest of the Ferozepore District, and, for the reasons given by Colonel Grey at the end of the memorandum, will add to the general efficiency of the supervising establishment on which the successful working of the system so much depends.

Extract, paragraphs 3 and 4, of a letter No. 1833, dated 23rd February 1883, from F. C. CHANNING, Esquire, Senior Secretary to Financial Commissioner, Punjab, to the Commissioner and Superintendent, Hissar Division.

3. With reference to paragraph 4 of your letter, I am to remark that Mr. Lyall thinks that he understands the Ferozepore system. That system seems to him to be a very good one; but there is one point in it as to which he feels some doubts, *viz.*, whether the execution of the work allotted can, in practice, be exacted only from the men interested in the irrigation and in proportion to their interests, and without using illegal means of compulsion. If the proprietor class is able in practice to shift on to the shoulders of the tenant more than the tenant's fair share of the work, and to exact much unpaid labor from Kamins and other dependents, then Mr. Lyall is disposed to hold that in respect to fair adjustment of burden of work upon the shoulders of the parties interested the Mooltan system is superior.

4. Again, in addition to the want of a check upon the proprietor's power of shifting the burden upon other people's shoulders, there is also, Mr. Lyall thinks, a want of a legal or recognized penalty. In paragraph 32 of the Bahawalpur Administration Report for 1871-82 (a copy of which forms part of Appendix B to your letter under reply), the following words occur:—"allotted in pieces called daks to the landholders to be cleared within a period fixed for that particular mile under heavy penalties." In a Native State there would be no difficulty in providing a fitting penalty; but in a British district this would not be easy. Accordingly, no penalty seems to be provided in the Ferozepore agreement; for the power of the Tahsildar to levy money at a labor-commutation rate, and to have the work done by paid labor, is not a power easy to use efficiently (as has been proved by experience), and, moreover, can hardly be called a penalty. The danger of course is, that in the absence of an efficient legal penalty, illegal forms of compulsion will be applied, and when such compulsion is used, it is likely to be often used unfairly as well as illegally. Its application by inferior officials or headmen cannot be checked or tested: being irregular, its use is denied and leaves no trace.

It is to be hoped, however, that the Canal Act will be so amended as to give any powers necessary for working efficiently the system introduced by you.

No. 51 C., dated Fazilka, 13th March 1883.

From—Lieutenant-Colonel L. J. H. GREY, C. S. I., Officiating Commissioner and Superintendent, Hissar Divison.

To—The Senior Secretary to Financial Commissioner, Punjab.

In forwarding a memorandum of proposals for the future administration of irrigation works proposed in Fazilka, I beg to point out that the cost of these will probably fall at $2\frac{1}{2}$ annas an acre on the area irrigated.

2. In the case of Fazilwah, which will irrigate the Hethar Chak, now under fluctuating assessment, the irrigators claim the co-operation of Government.

3. They express their willingness to construct the canal without such co-operation, and are indeed now doing so. But they declare (and the Tahsildar confirms this) that the Settlement Officer has proposed that one-tenth of the revenue realized under the fluctuating assessment shall be spent on works of irrigation, and this is the assistance they ask.

4. I consider, therefore, that Government should contribute half the amount of the *bachh* rate on irrigated acreage yearly up to a limit of $1\frac{1}{2}$ annas an acre (being one-tenth of the average assessment rate of 15 annas an acre).

P. S.—Copy of Deputy Commissioner of Sirsa's No. 75, dated 14th instant, on the subject, is forwarded herewith.

Memorandum by Lieutenant-Colonel L. J. H. Grey, c. s. i., Officiating Commissioner and Superintendent. Hissar Division,—dated Fazilka, 13th March 1883,

The *abnoshes* of the Mubarakwah and Fazilwah canals, now under construction in Fazilka, have now filed applications for admission into the Ferozepore irrigation system.

2. In these applications they have agreed to be bound by all the rules and regulations accepted by the Ferozepore irrigators, and have accordingly signed the Ferozepore Wajib-ul-arz. Similarly they have agreed to pay the *bachh* or rate yearly fixed in December at the audit meeting of the irrigators, in which they will take part.

3. Under these circumstances, it will be necessary to recast the Ferozepore irrigation establishment so as to provide for the inclusion of the two Fazilka canals into the Ferozepore system. The above establishment stands at present as follows :—

(A).—Expenditure common to all irrigators.

	Pay.	Contribution for pension.	Provision for travelling allowance.	Remarks.
Extra Assistant Commissioner--Superintendent.	Rs. 3,000 ...	Rs. 500 ...	Rs. 600 * ...	*At Rs. 3 per day, or 4 as. a mile.
Reader and Computer ...	Rs. 480, rising by yearly increment to Rs. 600.	...	Rs. 100 † ...	†At three-tenths of pay.
To Chaprasis ...	Rs. 144.			
Overseer ...	Rs. 720, rising as above to Rs. 960.	...	Rs. 350 ‡ ...	‡At Rs. 15 per mensem in quarters, or 2 annas per mile levelled, and on anna per mile travelled.
Tindal and Khalasis of Overseer.	Rs. 312.			
Contingencies ...	...	...	Rs. 394 § ...	§Accounted to expenditure.

Total provision for 1883 under (A) Rs. 6,600.

(B)—Special Expenditure of abnoshes *(irrigators).*

		Pay.
2 Naib-Tahsildars	... Rs.	1,200
5 Mohtamims	... ,,	1,200
1 Muharrir	... ,,	180
7 Canal Chaprasis	... ,,	420
Watchmen on dams during floods	... ,,	300
Reserve for unforeseen expenditure	... ,,	1,425
Total provision for 1883 under (B)	... ,,	4,725

(C)—Special Expenditure of the Mamdot Estate.

Naib-Tahsildar	Rs. 720	6 Mohtamims	Rs. 1,440
Assistant to do.	,, 360	6 Chaprasis	,, 360

Total provision for 1883 under (C) Rs. 2,880.

4. Of the above heads of expenditure that marked (A) is divided in four equal parts, of which one part, or Rs. 1,650, is paid by the Mamdot Estate; the same amount by the District Fund, to which all irrigators, including the Mamdot Estate, contribute; and Rs. 3,300 is added to (B) for distribution by a rate on irrigated acreage.

Then (B) enhanced as above is realized by this *bachh* or rate on the irrigated acreage in Ferozepore, exclusive of the Mamdot Estate. This rate for 1883 falls at 2 annas per acre irrigated in 1882. To this 2 annas per acre

is added, 6 pie per acre being a separate rate levied in favor of the *Mirabs* and the Patwaris.

Finally, (C) is paid by the Mamdot Estate, plus Rs. 1,650 on account of (A). This Estate also pays directly 6 pies per acre to *Mirabs* and Patwaris.

5. This arrangement has to be recast so as to include two canals in Fazilka, which, when fully developed, will irrigate 20,000 acres; their aggregate length with branches will reach some 70 miles; and the river-side tract which has to be covered by the Canal establishment (A) in constant tours will be extended from a length of above 90 miles to one of above 120 miles. Thus an increase of establishment and expenditure becomes necessary.

6. I propose accordingly that these establishments (A), (B) and (C) be remodelled as follows :—

(A).

	Pay.	Contribution.	Special allowance.	Provision for travelling allowance.	Remarks.
Extra Assistant Commissioner—Superintendent.	Rs. 3,000 ...	Rs. 500 ...	Rs. 600 ...	Rs. 600 * ...	* At Rs. 3 a day, or 4 annas a mile.
Assistant Superintendent.	Rs. 960, rising to 1,200.	...	...	Rs. 240 † ...	† Fixed.
Reader and Computer.	Rs. 600, rising to 720.	...	...	Rs. 120 ...	At three-tenths of pay.
Chaprasis ...	Rs. 144.				
Overseer ...	Rs. 780, rising to 1,080.	...	...	Rs. 600 ...	At Rs. 30 per mensem in quarters, or 2 annas per mile levelled, or 1 anna per mile travelled.
Tindal and Khalasis	Rs. 312.				
Contingencies ...	...	...	...	Rs. 344 ...	

Total provision for 1884 under (A) Rs. 8,800.

(B 1.)

2 Naib-Tahsildars ...	Rs. 1,200				
7 Mohtamims ...	„ 1,680				
1 Moharrir ...	„ 180				
9 Canal Chaprasis ...	„ 540				
Watchmen ...	„ 360				
Reserve ...	...			Rs. 1,540	

Total provision for 1884 under (B) Rs. 5,500.

(C 1.)

Naib-Tahsildar ...	Rs. 720				
5 Mohtamims ...	„ 1,200				
6 Canal Chaprasis ...	„ 360				
Contingencies ...	...	...	...	Rs. 50	

Total provision for 1884 under (C) Rs. 2,330.

7. In (A) an Assistant Superintendent has been added to serve the entire canal system, and the pay of the Computer and Overseer has been raised in the same view. The fixed travelling allowance of the Overseer has been placed on the scale of his grade, instead of being as hitherto that of a Sub-Overseer. A

trustworthy and efficient Overseer is not to be obtained on a lower scale th that fixed, and a cheap man in such a position, where so much depends on t accuracy of his work, would be very poor economy. Good men of this cla command from Rs. 100 to 150 per mensem in the market.

In (B) two Mohtamims and two Chaprasis have been added for the ne canals, and the provision for watchmen and reserve slightly increased on th same account.

In (C) an Assistant to the Naib-Tahsildar is reduced, as the Mamdot canal will have the services of the Assistant Superintendent. One Mohtamim is also reduced, as the number of the Mamdot canals is reduced by one. Contingencies have been added, which have not hitherto been entered.

8. Under the new arrangements the contributions of the Mamdot Estate and the District Fund will rise from Rs. 1,650 each, (*viz.*, one-fourth of A) to Rs. 2.200 each (one-fourth of A 1), and that of the *abnoshes* from Rs. 3,300 to Rs. 4,400. In the case of the Mamdot Estate this will be balanced by decrease of expenditure in (C 1) from Rs. 2,880 to 2,330. In the case of the District Fund the increase will be rendered legitimate, on the transfer of Fazilka to Ferozepore, by the addition of Fazilka income to the Ferozepore District Fund.

The remaining increase of Rs. 1,100 under (A 1)—from Rs. 3,300 to 4,400 —wll be added to the amount to be distributed by *bachh* under (B 1), the Fazilka *abnoshes* being included in that *bachh.*

The total amount for *bachh* is thus increased from Rs. 8,025 to Rs. 9,900 by Rs. 1,875, being the increase just mentioned of Rs. 1,100 under (A 1) and an increase in (B 1) of Rs. 775.

But the *bachh* on an additional 15,000 acres in Fazilka at even 2 annas per acre will bring in that amount, whereas when fully developed the new canals will irrigate 20,000 acres. At first of course even 15,000 acres of irrigation will not be attained, but in the interior the Ferozepore *abnoshes* will obtain an equivalent for increased expenditure, as stated in the next para.

9. The great blot in the Ferozepore system has hitherto been that it depend upon one individual. During 1874—77 this was myself, aided by the Tahsildars whom I had trained. During my absence of four years at Bahawalpur and in England the trained Tahsildars were all transferred. I gave Agha Muhammad an appointment in Bahawalpur, Babu Mya Das went to Lahore; Elahi Bakhsh to Sialkot; Ghazanfur Ali to Moga. For a while, however everything went smoothly, but in 1880 a crisis arose. The river in August left the heads of two canals in Zira. The people turned out *en masse* to remedy this, and asked for direction. There was no one to direct them; and when I rejoined in November 1880, I found miles of ruined crops—sugar-cane, rice, &c.—along the course of the Daulatwah and Buchairawah canals. On this I applied for and obtained sanction to create the present Ferozepore irrigation establishment, in view of my being again transferred. I put everything in order; set the establishment working; trained Babu Mya Das to take my place in regard to the irrigation; and in March 1882 I left for Calcutta.

Now, therefore, the system depends upon Babu Mya Das. If for any cause he were removed or were unable to look after the canals, the conditions which arose in 1880 might again arise to the prejudice of the Ferozepore irrigation.

10. Consequently the welfare of this system demands that Babu Mya Das should have an assistant ready to fill his place. I have always perceived this but did not see my way to provide for the expenditure. The present extension of the system affords the opportunity for this provision. In thus providing this important requisite for completing the efficiency of the system, the working of it will at the same time be much improved, for evidently a Superintendent of Irrigation who has to cover so much ground requires some one to take his place at points from which he may be distant.

No. 75, dated 14th March 1883.

From—R. W. TRAFFORD, Esquire, Deputy Commissioner, Sirsa.
To—The Commissioner and Superintendent, Hissar Division.

THE inhabitants of the Bahak Parganah in Tahsil Fazilka of this district have resolved to clear out the Padi nallah; this work will doubtless profit the Government revenue if successful, as the villages to be benefitted are under fluctuating assessment. I beg to call your attention to the Settlement Officer's remarks* in paragraphs 103 and 104, especially the first part of 104, and also copy of a letter from Secretary to Financial Commissioner to Secretary to Government, Punjab, received with No. 717, dated 11h July 1882, from Settlement Commissioner, and, with reference thereto, to enquire whether the Government are prepared to aid the undertaking by a grant of a tenth of the revenue realized from the flooded lands, or in any other manner.

* *Vide* page 8, paragraph 16, of Settlement Commissioner's No. 96 C., dated 7th April 1881, to be found among the printed correspondence headed Revenue June 1882, No. 3, Orders on the Assessment Report of the Sirsa District, Part 1.

No. 54, dated Hissar, 16th March 1883.

From—Lieutenant-Colonel L. J. H. GREY, C. S. I., Officiating Commissioner and Superintendent, Hissar Division,
To—The Senior Secretary to Financial Commissioner, Punjab.

In compliance with your telegram of the 28th February and one of 5th March, from Secretary to Government, Punjab, I submit report on irrigation works in Fazilka.

2. These are as follows :—

	Length.	Cubic contents of work.	Value Rs.
Fazilwah.			
Irrigating capacity 8,000 acres	... 25	2,598,261·00	... 4,059-12-8
Mubarakwah.			
Irrigating capacity 10,000 acres	... 30	14,389,975·93	... 23,332-0-0

3. The economy of the first-named canal is owing to its utilizing the Padi and other old river channels in the upper part of its course. It irrigates 61 villages in the Hethár Chak (Hethár mahals are very small compared with those of the Utár) and 4 villages in the Utár Chak.

This work is now in hand, and it may be hoped that irrigation will commence in May. No assistance is required for its construction, but only for its maintenance, *viz.*, a contribution of $1\frac{1}{2}$ annas per acre irrigated, as proposed in my No. 51 C., dated 13th March 1883.

4. The Mubárakwah is a much more important work as commanding great waste areas not irrigable by any other means, whereas the Hethár is irrigable by wells. In this work the existing Mamdot canal, named Buggawah, constructed in 1874 for the irrigation of a few Mamdot chaks on the Fázilka border, will be utilized for $9\frac{3}{4}$ miles, being remodelled as required.

5. With the grant of Rs. 5,000 asked from the District Fund contribution to Provincial Funds, will be constructed $5\frac{3}{8}$ miles of this work; $\frac{7}{8}$ of a mile falls to the share of the Mamdot Estate; the rest is allotted to the irrigators in tasks proportioned to their irrigable acreage.

6. These irrigators are 24 villages in the Utár Chak and 13 villages in the Hethár. It is in favor of these that a Resolution of the Sirsa District Committee, forwarded to Government with my No. 52, dated 10th instant, has asked for a grant of Rs. 5,000 from their accumulated contributions in the hands of Government. It is not proposed to *lend* the money, but to give it outright as a grant-in-aid on the precedent of Ferozepore, where sums, aggregating Rs. 28,000, were thus granted, first and last, to the irrigators of various canals. There is no reason, therefore, for fixing any instalments for recovery of the money, and certainly none for the levy of water-rate. Indeed the essence of this system of co-operative district canals is that the irrigators should construct them and

maintain them for themselves and pay their own establishments, and be thus free from all demands, Government obtaining its return for the grant of water from the Sutlej in the prosperity of its people.

I may note that these 37 *abnosh* villages of Mubárakwah have contributed to the District Fund since its establishment the sum of Rs. 5,654-13-0.

7. The above are all the details that it appears necessary to give. For the soundness and utility of the scheme I am responsible. The canal has been carefully and economically designed. I have had many years experience in designing such, and all that I have undertaken have turned out advantageous.

8. The construction of the Mubárakwah is now of course postponed upon your telegram. This is advantageous for Mamdot, as the Buggawah is thus set free to irrigate from May; whereas, had operations commenced, the chaks thereon would not have received water till July or August. Also the spectacle of the Fázilwah irrigation will encourage the irrigators of the Mubárakwah for their heavy task. Nevertheless there are more than counterbalancing disadvantages in the delay. The irrigation for *kharíf* is lost, and also my tenure of office being uncertain, it may happen that I shall not be here next cold weather, in which case the canal will probably not be constructed at all.

No. 101, dated Hissar, 20th April 1883.

From—Lieutenant-Colonel L. J. H. Grey, C.S.I., Officiating Commissioner and Superintendent, Hissar Division

To—The Senior Secretary to Financial Commissioner, Punjab.

In compliance with your No. 2392, dated 15th March, I submit a further report on the Mubárakwáh and Fazilwáh canals, in continuation of my No. 54, dated 16th March 1883.

2. I am called upon to state* as regards the Mubárakwah—

* Punjab Government letter No. 16, dated 16th March 1883, to Secretary to Financial Commissioner.

1st.—The conditions subject to which it will be undertaken; and,

2nd.—The arrangements to be made with the Mamdot State.

And as regards Fázilwah—

1st.—The conditions on which the villages have agreed to give labor;

2nd.—The manner in which funds have been and are to be provided;

3rd.—The system proposed for future management and control; and,

4th.—The respective rights of the irrigators, the District Committee (if it shares the work), and the Government.

With reference to both works, I am to say whether I think the Kotila jhil system could be adopted with advantage in Fázilka.

3. The conditions subject to which the Mubárakwah will be undertaken are stated in my No. 54, dated 16th March.

The canal is of a total length of 30 miles, entailing 14,389,975 cubic feet of work of a value of Rs. 23,332.

This work has been allotted as follows:—5$\frac{3}{8}$ miles, value Rs. 5,000, to the Sirsa District Fund contribution †; $\frac{7}{8}$ of a mile, value Rs. 1,000, to the Mamdot Estate; the remainder to 37 villages in Fázilka according to the *dukbandi* or task statement annexed (A).

† See this office No. 101 A of this day's date.

The District Fund contribution will be an out-and-out gift like similar grants-in-aid in Ferozepore; no water-rate will be levied; and the people will enjoy the results of their labor free of cost during settlement.

The Mamdot Estate contribution is for better irrigation afforded to the chaks hitherto irrigated by the Buggawah. The Mamdot Munsarim of irrigation admitted the propriety of allotting a *duk* or task of this value to the estate.

So far as regards the conditions of the undertaking, the system of future management is the same as that of the Fázilwah hereinafter explained; there are no special arrangements with the Mamdot Estate save those noted in the accompanying letter No. 63, dated 2nd March 1883, from the Deputy Commissioner, Ferozepore, to Commissioner, Lahore. The Mamdot Estate has six chaks hitherto irrigated by a small cut of 10 miles in length called the Buggawah. This has been adopted as a head for the Mubárakwah, and the irrigation of the chaks will be much improved is so doing, in consideration of which a *duk* of share of the work has been allotted to the Mamdot Estate as before mentioned.

4. I can think of no further details to give regarding this canal, but I attach a tracing of the longitudinal section (B).

The first ten miles are really designed on cross-sections, but it can serve no purpose to send these voluminous records in original (nor indeed can they be spared just at present), and a Commissioner has no establishment for preparing maps and plans or tracings of them, and has to solicit assistance from other offices. I also send a sheet of a map (C) on which I have indicated the line of this canal.

I will now answer the questions regarding the Fázilwah.

The Fázilwah is a canal 26 miles in length, containing 3,292,211 cubic feet of work, value Rs. 5,072.

The work, though notso important as the Mubárakwah for reasons stated in paragraph 4 of my No. 55, dated 16th March, before quoted, is by no means a small or unimportant work, for it will irrigate 8,000 acres of land for kharif and rabbi. It utilizes not the Padi only, but other old river channels in the upper part of its course, and it is therefore constructed at a cheap cost, which is no measure of its value.

It is being executed by 65 villages (small Hethár mahals) with a grant-in aid from the District Fund of Rs. 1,000.

This is an out-and-out grant, and no water-rate will be levied. The Government will share the results under the system of fluctuating assessment, and as Government has contributed nothing to the construction of the canal, it has been proposed by my No. 51 C. of 13th March, forwarding Deputy Commissioner Sirsa's No. 75, dated 14th March, that Government should contribute 1½ annas per acre irrigated to the *bachh* which will be levied for the maintenance of the canal. The object for which this *bachh* will be levied and the system proposed for future management and control of both the Fázilwah and the Mubárakwah are detailed in the memorandum forwarded with my letter dated 13th March, above quoted. I therein proposed that both canals should be included in the system of irrigation of the Ferozepore District, to which the Fazilka Tahsil will eventually belong. As regards the conditions on which the villages have agreed to give labor, I have explained in that memorandum that they have agreed to be bound by all the rules and regulations accepted by the Ferozepore irrigators, and have signed the Ferozepore Wajib-ul-arz.* All details on the subject of the system as established in Ferozepore may be found in the Canal Manual forwarded with my No. 55 A., dated 16th March.

As regards the last question asked of me, my opinion on the Kotila jhil system is that its adoption in Fazilka is needless. All the Government assistance required there (so long as the fluctuating assessment system is maintained) is 1½ annas per acre irrigated, which, even when the Fazilwah irrigation is fully developed, will only amount to Rs. 750 per annum. But I do not anticipate † that now that the ground on which this fluctuating assessment system was adopted (*viz.*, failure of irrigation) is removed, it will long be maintained in the face of the strong protests of the people, in which case no Government assistance will be required on the Fazilwah Canal.

† See this office No. 85, dated 10th April 1883.

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* NOTE.—I recommend, however, that the proposals negatived at paragraph 8 of your No. 100 C. S., dated 9th September 1881, to Settlement Commissioner, should now be accepted, as the grounds on which they were then negatived are no longer good. I do not recommend "a system of *chher* labor and fines for non-attendance," but the *duk* system detailed in the memorandum forwarded with my No. 48, dated 7th March 1883.

5. In conclusion, I have to state that the Fazilwah will probably be passed and opened by Babu Mya Dass about the 15th May. The Mubarakwah might then be put in hand for the lower two-thirds of its length. The remaining one-third, being the 10 miles of Buggawah, cannot be touched till after its irrigation is closed in October next; for, as explained in the last paragraph of my No. 54 of 16th March, when Mubarakwah was postponed, it was determined to open the Buggawah. Of course, if the Mubarakwah is to be undertaken, it will be necessary for me to proceed to Fazilka in the end of May, which is not a very suitable time for travelling. I am, however, ready to do this if desired.

No. 63, dated 2nd March 1883.

From—T. O. WILKINSON, Esquire, Officiating Deputy Commissioner, Ferozepore,
To—The Commissioner and Superintendent, Lahore Division.

WITH reference to his No. 544-3729, dated the 29th November 1882, states that there is no objection to the canals belonging to the Mamdot Estate being extended to Fazilka in the Sirsa District, provided the levels are maintained and the irrigation in the Mamdot Estate does not suffer.

No. 101A., dated 20th April 1883.

From—Lieutenant-Colonel L. J. H. GREY, C.S.I., Offg. Commissioner and Superintendent, Hissar Division,
To—The Senior Secretary to Financial Commissioner, Punjab.

THE following copy, with plans and estimates, is forwarded for transmission to Government for orders.

[NOTE.—The correspondence forwarded was Punjab Government letter No. 27, dated 14th April 1883, and application of the District Committee, Sirsa, for a grant of Rs. 5,000 for the Mubarakwah Canal, printed at page 293 of this Selection.]

No. $\frac{183\text{ S.}}{881\text{ A}}$, dated Simla, 7th July 1883.

From—H. C. FANSHAWE, Esquire, Officiating Junior Secretary to Government, Punjab,
To—The Senior Secretary to Financial Commissioner, Punjab.

I AM directed to acknowledge the receipt of your letter No. 37 of the 12th ultimo, on the subject of the Inundation Canals which are being constructed, under the superintendence of Colonel Grey, by the villages of the Fazilka Tahsil of the Sirsa District, and to convey the orders of the Lieutenant-Governor on the various points which are treated in the correspondence as follows.

2. In reply to the enquiries regarding the Mubarkwah Canal, which were made in paragraphs 5 and 6 of Mr. Tupper's letter No. 16-271 of 10th March, Colonel Grey has stated, *first*, that the conditions on which the work will be undertaken by the villages are the same as those in force of the Ferozepore District, and which are described in Appendix VII of his Report on the Ferozepore Canals for the year 1876; *secondly*, that the only arrangement necessary with the Mamdot Estate is that a sum of Rs. 1,000 shall be provided by the estate towards the cost of the canal on account of the superior facilities for irrigation which it will afford to the Nawab's chaks; *thirdly*, that the funds provided for the execution of the work will be the above contribution and a grant of Rs. 5,000 from the balance of the District Fund, to which the sanction of Government is solicited; *fourthly*, that the system of management will be the same as in Ferozepore, the canals being placed under the special establishment sanctioned for that district, to which slight additions, to be paid for as detailed in the margin, will be made in consequence of the extension of operations; and, *fifthly*, that as the grants made by the District Committee and Government will be out-and-cut gifts, the canals will belong entirely to the persons by whom they are being constructed and will be aimaintned.

	Rs.
By the Ferozepore District Fund ..	550 per annum.
By the Irrigation of the Ferozepore and Sirsa districts, and by Government on account of increased receipts from the fluctuating assessments in Sirsa ...	1,875 ditto.
	2,425 ditto.

3. These proposals appear to the Lieutenant-Governor to be generally satisfactory, and, subject to the following remarks on certain points, His Honor is pleased to sanction the commencement of work on the Mubarakwah on the conditions proposed by Colonel Grey. The longitudinal sections of the canal and the other papers which were forwarded by the Commissioner in the original for the information of Government, are returned herewith.

4. In the first place, I am to point out that it appears necessary that some definite agreement should be made between the villages and the Mamdot Estate regarding the extent of the share of each in the water of the canal. It is understood that the system of joint-ownership of canals in Ferozepore was not found to work well, and that in consequence the Nawab finally bought out the share of the villages who had originally assisted in the construction of the works. It will be desirable, therefore, to provide against the occurrence of a similar contingency in Sirsa, by clearly defining the rights of the Mamdot Estate and of the villagers from the first.

5. In the next place, I am to observe that the Lieutenant-Governor considers that there are objections to granting water over which Government possesses rights under Act VIII of 1873, without demanding payment of any royalty whatsoever. In the present instance of the Mubarakwah and Fazilwah canals, it appears that the people have been led to expect that they would be treated precisely in the same way as the villages in Ferozepore have been, and that no water-rate would be levied on the lands irrigated from the canals dug by them, and the Lieutenant-Governor is therefore willing to allow them to use the water free of any payment for a period of 20 years, as recommended by Colonel Grey. His Honor, however, desires that in all cases in future some light payment should be imposed, in order to mark the rights of Government over the water. This payment may be a merely nominal sum, such as 1 per cent. on the revenue of the land irrigated, or may even take the form of a portion of the revenue already paid which for this purpose would in future be divided into two separate charges, as is often done in the case of payments by tenants of Government lands. But in some shape or another a light payment in acknowledgment of the undoubted rights of Government should always be levied; and in the present case it will be necessary for the Commissioner to see that the right of Government to levy a water-rate for the use of water is distinctly asserted in the agreements signed by the people, and that it should be clearly provided that the right of Government to levy such a rate is waived in consideration of the efforts made by the villages themselves to develop canal irrigation for a period of 20 years only, and that after the expiry of that period Government will impose such water rates in such manner as may then be considered suitable. This question will be discussed more fully in the case of the private canals of the Shahpur District, and the principles which may be finally laid down for the latter will no doubt be found applicable to the canals of the Sirsa and Ferozepur districts also, when the period of exemption sanctioned for them has expired.

6. With reference to the contribution of Rs. 5,000 from the balance of the District Fund, and also to the sum of Rs. 1,000 which has been granted by the District Committee towards the construction of the Fazilwah, I am to say that the Lieutenant-Governor considers it objectionable that grants of the kind should take the form of out-and-out gifts, and that this practice should not be followed in future. Such grants should, in His Honor's opinion, invariably entitle the body making them to an interest in the works constructed, and they should be gradually recovered by a low rate levied on irrigation so calculated as to afford a fair interest on the money laid out, and to enable the principal to be recovered during a period of years. Of course if it is considered desirable, the levy of such a rate can be deferred till the first five or ten years of the period of exemption from payment of the Government royalty have expired. In the present instance the Lieutenant-Governor sanctions the grant of Rs. 5,000 from the balance of the District Fund as an out-and-out gift, subject to any modifications which may hereafter be proposed by the Commissioner with reference to the considerations discussed in paragraphs 8 and 10.

7. The increase which Colonel Grey has proposed to make to the Ferozepore Irrigation establishment, in order to enable it to undertake the additional work of the control and management of the Fazilka canals well, appears to the Lieutenant-Governor to be appropriate; and if the proposals are accepted by the Ferozepore District Committee and irrigators, they can be carried into effect. As long as the system of fluctuating assessments continues in force in the Hethar tract of the Fazilka Tahsil, the Lieutenant-Governor is willing to sanction a contribution from the revenue of half the share of the cost of this establishment which may fall on the Sirsa Tahsil up to a limit of 1½ annas per acre under the fluctuating assessment irrigated by the canals in return for the direct benefit which Government will derive from the extension of irrigation. The question, however, of the fluctuating assessments in the Hethár trac oft Sirsa does not appear to the Lieutenant-Governor to have been sufficiently considered in connection with the present proposals, and I am to ask for the expression of the opinion of the Financial Commissioner and of Colonel Grey on the following observations.

8. The whole of the course of the Fázilwah Canal (on which the system of labour and management will be the same as that on the Mubárakwah and in the Ferozepore District), and 13 villages out of the 37 which have agreed to construct the Mubárakwah Canal, are situated in the Hethár assessment circle of the Fázilka Tahsil, with perhaps some exceptions of the above villages on the Mubarakwah, which may be included in the Ferozepore District. The lands of this circle, except those lying in the Utár chaks, are under a fluctuating assessment, and in accordance with this system rates varying from 12 annas to Rs. 2-4-0 per acre are levied on lands irrigated by the natural floods of the river and by wells. In accordance with this method all villages watered by the Fazilwah Canal, and all Hethar villages of the Sirsa District, except as regards lands in Utár chaks, watered by the Mubarakwah Canal, will be liable to pay on all lands irrigated by the canals, whether cultivated at the time of settlement or not, a fluctuating assessment, which cannot be fixed at less than that leviable on well lands bearing a single crop, *viz.*, Re. 1-8-0 per acre. The Utár villages, however, will pay only 3 or 3½ annas per acre on the area actually cultivated at settlement, and will not be liable to any additional assessment on account of canal irrigation. The Commissioner has proposed that in return for the direct advantage which Government will derive from the development of canal irrigation in the Hethar, a contribution up to a limit of 1½ annas per acre irrigated in the tract under a fluctuating assessment should be made by Government towards the cost of the irrigation establishment, and, as above said, the Lieutenant-Governor is prepared to sanction this recommendation. The net sum which will therefore probably be leviable from irrigators in the Hethar chak will be Rs. 1-9-0 per acre, allowing an extra anna for the cost of the Canal establishment; while in the Utár a payment of only 6½ annas will be demanded on both accounts on each acre of canal-irrigated land. It appears to the Lieutenant-Governor that the great difference between the gross payments in the two tracts is likely to give rise to complaints on the part of the Hethar people, who will undoubtedly consider themselves unfairly treated in comparison with those in the Utar Circle and in the Ferozepore District. In Mr. Tupper's letter No. 102-566 of 2nd May, Sir Charles Aitchison has expressed his willingness to allow a fixed revenue demand to be substituted for a fluctuating assessment as soon as irrigation in the Hethar tracts has been rendered assured by the canals; but until this is done the present system must continue, and in no case can Government consent to forego revenue already due because of the development of canal irrigation. It may be that Commissioner of the Division and the Financial Commissioner have considered this difficulty and that they do not see any objection to two systems so widely different in their financial effect being applied to the Fazilwah and Mubarakwah canalas; but no opinion is expressed on the question in the present correspondence, and His Honor would be glad to know what the views of Colonel Davies and Lieutenant-Colonel Grey regarding it are. It appears to the Lieutenant-Governor that it would at least be possible to exempt the lands recorded as barani at settlement from payment of a fluctuating canal-irrigated rate hereafter, just as maafi and jagir lands have been exempted from the payment of

the owner's rate; but this will affect scarcely one-tenth of the cultivated area of the tract. It has also been suggested that a low water-rate of 6 annas per acre, to be levied by the District Committee in return for its grant-in-aid of Rs. 5,000, should be imposed from the first on Utar lands irrigated from the Mubarakwah, and that half fluctuating rates only (as in the case of wells secured by protective leases) should be levied on Hethar lands taking canal water. But in working out any such plan it will be necessary to guard against possible loss to the fluctuating revenue of the Hethar which Government has right to expect, and by this system the same favorable terms of exemption as prevail in Ferozepore will not be conceded to Sirsa. As, however, the assessment of the land-revenue in Sirsa is much lighter than that in Ferozepore, as far as the Utar chak is concerned, the inequality of treatment of the two districts will probably be found to be more apparent than real.

9. The difficulty of reconciling the system in force in Ferozepore, and which it is proposed to introduce in the Utar, with the arrangements for a fluctuating assessment in the Hethar, so as to equalize as nearly as possible the conditions on which all three tracts will receive canal water, are apparently considerable, and the Lieutenant-Governor considers that it is to be regretted that they have not been fully discussed in the present correspondence. His Honor, however, has no wish to delay the commencement of the work of the Mubarakwah Canal on this account alone, if Colonel Grey does not think that the financial difference above noted between the Utar and Hethar is of any great moment, or is able to see any practical way out of the difficulty. It must be distinctly understood, however, that no proposal can be accepted which will involve a loss of Government revenue as assessed by the Settlement Officer, and that it is absolutely necessary that the people in the Hethar and Utar tracts should unmistakeably be aware of the exact terms on which Government has permitted the canals to be constructed and the water to be used without payment of royalty for 20 years. On neither of these points will His Honor be able to consider or approve any modifications hereafter, on the ground that the conditions which have been proposed and sanctioned were not clearly understood by the people at the time.

10. Colonel Grey has expressed an opinion that there is no need to place the Sirsa canals under the District Committee, or to grant that body a lease of the revenue of the lands which will be irrigated by these works. The Lieutenant-Governor has no wish to force his view regarding these proposals on the Commissioner, but I am to say that His Honor considers that the arrangement has many advantages, and that in all cases in future where grants are made towards the construction of such works by the District Committee, it is desirable that such a system should be introduced. Its introduction will perhaps be necessary even in the present case, should Colonel Grey think it desirable to levy a low water-rate in the Utár tract in order to lessen the inequality between the gross payments on account of irrigation which will be demanded in it and in the Hethar.

11. In conclusion, I am to express the acknowledgements of the Lieutenant-Governor of the interest which Colonel Grey has taken in developing irrigation in the Fazilka Tahsil, and the energy with which he has organized the undertaking. His Honor will be glad to receive a full report on the working of the Fazilwah as soon as the area irrigated has been measured up in the cold weather; and I am to request that the report may be accompanied by such extracts from the Ferozepore reports as will clearly show the system on which the canal has been constructed and will be maintained, in order that it may be circulated for the information and guidance of officers in the Punjab. The report can be submitted in manuscript, and will be printed in this office.

12. I am to take this opportunity of forwarding, for the information and use of Colonel Grey and the Deputy Commissioner of Sirsa, the plans and surveys of the Hethar tract which were prepared last cold weather by the surveyors under the orders of Mr. E. Palmer.

No. $\frac{184\text{ S}}{188\text{ B}}$

COPY forwarded to the Commissioner and Superintendent, Hissar Division.

No. 6805, dated 1st August 1884.

From—The Secretary Financial Commissioner, Punjab,

To—The Commissioner and Superintendent, Hissar Division.

In continuation of the correspondence on the subject of the Inundation canals of the Fazilka Tahsil ending with your No. 23 of 24th January last, and with reference also to your subsequent letter No. 101A of 10th April last, I am directed to forward for information and guidance copies of two letters from this office to Government and of the Government reply thereto as noted in the margin, and I am to add the following observations and instructions.

1. This office No. 7 C., of 24th April 1884.
2. This office No. 18 C., of 30th April 1884.
3. Punjab Government No. 24 of 7th July 1884.

2. The formal agreement as to the Mubarakwah canal which was received under cover of your No. 23 of 24th January last, and which is referred to in the 4th paragraph of my No. 7C of 30th April last, has been approved by Government and a copy thereof having been taken, is returned herewith for record in the Sirsa District office.

3. You will observe that Government has ordered that the grant of Rs. 5,000 made by the Sirsa District Committee in aid of the Mubarakwah (which is discussed in para. 3 of my No. 7C., already referred to should be treated as a loan, and be recovered from the irrigators on that canal by a low irrigation rate to be levied for five years. You should now take steps to carry out the orders of Government, and when your arrangements are complete the outcome of them should be notified to this office for information.

4. With reference to your letter No. 186, of 14th July 1883, and to para 10 of my No. 7 C., I am directed to draw your particular attention to para 7 of the Government letter now forwarded. You should now proceed to draw up a form of "patta" which before issue must be submitted to the Financial Commissioner for approval. It will be convenient if the specimen form is submitted both in English and vernacular.

5. With reference to the 11th paragraph of my No. 7 C, I am to draw your attention to the orders in the 8th paragraph of the Government letter. You will see that the fluctuating assessments which are in force in the Fazilka Hethar will be maintained for the present; and that the rates for canal irrigated land under these fluctuating assessments have been fixed as follows:—

Per acre.	Rs.	A.	P.
Chural, Masar, Methra	0	12	0
All other crops	1	4	0

It has also been ordered that all canal lands in villages under fluctuating asessments which were recorded as waste or unirrigated at the recent settlement shall pay only half rates for a period of 10 years, which may be reckoned from the present kharif inclusive. You should now take all steps necessary to carry out these orders. I am to add that the subject of the working of the fluctuating assessments in the Fazilka Hethar should be regularly noticed in the Annual Revenue Report; and at the close of the Rabi harvest of 1886-87, the propriety of introducing fixed assessments can be again considered.

6. In regard to the 9th paragraph of the Government letter, I am to desire that a careful and complete report may be submitted on the subject of the Shokatwah Canal. In connexion with this subject I am to draw attention to the 12th and following paragraphs of my No. 7 C, and also to my letter No. 18C. Before submitting your report you should consult the Commissioner, Lahore, on the subject of water-rates in the manner desired by Government.

7. The questions raised in the 10th paragraph of the Government letter will be dealt with by the Financial Commissioner on receipt of your report on the Shokatwah.

No. 7 C., dated Simla, 24th April 1884.

From—R. G. Thomson, Esquire, Offg. Senior Secretary to Financial Commissioner, Punjab,
To—The Offg. Junior Secretary to Government, Punjab.

1. Commissioner Hissár's No. 186 of 18th July 1883.
2. Ditto No 204 of 7th August 1883.
3. This office No 9451 of 5th November 1883.
4. Ditto No. 9452 ditto ditto
5. Commissioner Hissár's No. 313 of 5th December 1883.
6. Ditto No. 325 of 20th December 1883.
7. Ditto No. 11 of 10th January 1884, with two memoranda.
8. Ditto No. 12 of 17th January 1884.
9. Ditto No. 16A. of 18th January 1884.
10. Ditto No. 23 of 24th January 1884.
11. Commissioner of Settlements and Agriculture's No. 7 of 4th January 1884.

With reference to the correspondence ending with your letter No. 183 S. of 7th July 1883, I am directed by the Financial Commissioner to submit the correspondence noted on the margin, and to make the following observations and suggestions in regard to the inundation canals constructed or proposed to be constructed in the Fázilka tahsíl of the Sirsa district. As the subject has become somewhat complicated, and as new matter has been introduced, Colonel Davies considers it better to deal in the first place with those minor topics in regard to which there is little room for controversy or disagreement, and thereafter to discuss the more important matters which involve principles of some magnitude and capable of very extensive application.

No. 186 of 18th July 1883, *ad finem.*

2. In the first place, in regard to the report upon the working of the Fázilwah, which was asked for in the eleventh paragraph of your No. 183 S., already referred to, I am to say that (as has been pointed out by Colonel Grey in the passage marginally noted) the system under which the Fázilwah was constructed and is maintained, has been fully described in the Canal Manual, which was submitted to Government with this office No. 143 C of 16th August 1883. Colonel Grey has also promised to submit a report upon the actual irrigation result obtained from the Fázilwah during the past season. This has not yet been received. But for the purposes of the present correspondence, it is sufficient to note that the canal has hitherto proved thoroughly successful. It was opened in June 1883 and continued to run until the following October. Although its distributaries are still incomplete, it actually irrigated 8,237 acres, and Colonel Grey estimates that its irrigating capacity will ultimately be increased to 15 or even 20 thousand acres.

* No. 186 of 18th July, para. 3.

3. Secondly, in regard to the relation of the District Committee to these new canals, which is discussed in paras. 6 and 10 of your letter No 183, I am to say that the Financial Commissioner entirely agrees with Colonel Grey* in the opinion that it is unnecessary and undesirable to associate the District Committee with these undertakings, either on the plan in force in the Kotila Jhíl Chak of the Gurgáon district, or upon any similar plan. In regard to the contribution made by the District Committee in aid of the Fázilwah, it appears to be unnecessary to make any further remark; but in regard to the grant of Rs. 5,000 in aid of the Mubárakwah, which has received the provisional sanction of the Lieutenant-Governor, Colonel Davies desires to say that, in his opinion, the grant should be finally sanctioned as a loan and not as a gift. The loan might be made repayable in five years without interest, and the instalments should be collected by a low rate upon irrigation. This arrangement will not fix any heavy burden upon the irrigators, who will in any case greatly profit by the construction of the new canal. The Financial Commissioner does not attach much weight to the argument, that these irrigators have already contributed much more than Rs. 5,000 to the District Fund by their payments to the local rate. No zamíndár can claim that the District Fund should make a well, an embankment or other improvement upon his estate, because he has paid the value of such improvement to the local cess. He has in the meanwhile used the roads and enjoyed, with the other inhabitants of the district, the general benefit of the improvements effected by the Committee in the general interest. In the passage noted in the margin, Mr. Wilson, late Settlement Officer of Sirsa, has proposed that the contribution of Rs. 5,000 from the District Fund be indeed treated as a loan, but be repaid out of the proceeds of a water-rate which may be levied under the proposals

No. 55 of 24th December 1883, paragraph 15 (enclosed with Commissioner of Settlements and Agriculture's No. 7 of 4th January 1884).

described hereafter. As this water-rate (if levied) would, apart from this question of repayment, belong to Government, Mr. Wilson really proposes that Government should make an out-and-out grant to the Mubárakwah in place of the District Committee. Such a plan appears to be both unnecessary and inadvisable.

4. In the third place, I am to say that Colonel Grey was at first disposed to consider that any definite agreement (such as was indicated in the 4th paragraph of your letter No. 183 S.) for the division of the water of the Mubárakwah between the Mamdot estate and the Sirsa villages was unnecessary, on the ground that it appeared to him to be physically impossible for the Mamdot villages to obtain much more water than the quantity to which they were equitably entitled. But in this office letter, which is marginally noted, certain considerations were pointed out, which rendered the execution of some agreement exceedingly desirable. And in his letters No. 313 of 5th December, and No. 23 of 24th January last, Colonel Grey has submitted and explained a formal agreement duly executed by the interested parties. Colonel Davies considers this agreement to be sufficient, and recommends it for the approval of Government. It will be observed that Colonel Grey reports the Mubárakwah as practically complete and ready for work as soon as the river rises.

No. 9452 of 5th November 1883.

5. These matters being disposed of, the following more important questions remain for consideration :—

(*a*) As to the system of assessment to be introduced or continued in the lands now first rendered irrigable;

(*b*) As to the protection from increased taxation to be given to the new irrigators ; and

(*c*) As to the benefit to be derived by Government from the construction of these new canals, and the appropriation of the water of the Sutlej.

In the Financial Commissioner's opinion, the answer to most of these questions depends (under the circumstances of the present case) upon the answer which may be given to a preliminary question, *viz.*, is Government legally entitled to demand a *royalty* for the water drawn from the Sutlej for these canals ; and if so, in what form and to what extent should that right be exercised ? In paragraph 4 of this office letter No. 37 C. of 12th June 1883, Colonel Davies has already given reasons for doubting whether the Government has any legal powers to charge a seignorage for the use of river water, except such as it may secure by agreement. To the view thus indicated, Colonel Davies still strongly adheres. The preamble to the Canal Act merely declares the right of Government to use and control river water for public purposes. But it gives no power, and declares no right to tax the permitted use of such water by other persons. The only powers of taxation given by the Act are those contained in Sections 36 and 37 which authorize the levy of owner's and occupier's rate on land irrigated from canals (as defined in Section 3) constructed, maintained or controlled by Government. The canals now in question hardly seem to fall within this definition ; and if this be so, it would seem to be impossible, under the present law, to take either owner's or occupier's rate in respect of them. It is of course open to Government to induce the irrigators to agree to pay for water which cannot be withdrawn from the river in the first instance without the express or tacit consent of Government. But money due in this way to Government, under agreement or contract, and not by reason of a power of taxation vested in Government, would be a mere debt not legally recoverable save through the Civil Courts in case payment were refused or delayed. The inconvenience of such a state of affairs is apparent. Further, it appears to Colonel Davies that to demand a seignorage on water under the guise of a voluntary agreement entered into by the irrigators will, in fact, though perhaps not in theory, be the assumption by the Local Government of a power of taxation which has not been conferred on it by the legislature. The true solution of the difficulty seems to lie in an amendment of the Canal Act, which would give power to impose an owner's rate on all lands irrigated from canals, whether constructed, maintained or controlled by Government or not. The claim to such a rate would, like the claim to land revenue, be based on the fact that Government is the paramount

owner of land and water alike. It would, in fact, be no new claim, but merely the equivalent, or less than the equivalent, of what is at present the universally admitted right of the State to assess at irrigated rates lands watered from works constructed by private individuals with their own capital.

6. In actual practice, the levy of an owner's rate, of the nature now in contemplation, might render it necessary to adopt in a few cases a somewhat elaborate procedure which need not be discussed. And in such instances it might be thought proper, in the interests of simplicity, to adopt the alternative plan of a royalty to be levied on all water supplied to a private canal. But in this case, too, Colonel Davies considers that distinct power to levy such a royalty should be taken, and that it should not be collected under the guise of an agreement. For reasons which need not be discussed at length, Colonel Davies thinks that such a royalty, if levied, should not exceed the amount which might be taken as owner's rate under the rules for the time being in force.

7. It is now necessary to consider the important practical question raised in the seventh paragraph of your No. 183 S., already referred to, *viz.*, should the system of fluctuating assessment now in force in the Fázilka Hethár be continued for the present? This question was referred by Colonel Davies for consideration to the Commissioner of Hissár, to the Commissioner of Settlements and Agriculture and to Mr. Wilson, the Settlement Officer. The latter two officers are in favour of maintaining the fluctuating system, at any rate for the present. But Colonel Grey desires to abolish it without delay.* The Financial Commissioner considers it unnecessary to discuss the question, whether the Fázilwah is a new work or a mere development of the Padi Nullah. Nor does he propose to enter into any debate as to the comparative merits of fixed and fluctuating assessments in the abstract. Such remarks as appear to be necessary on the latter subject, he has entered as marginal comments on Colonel Grey's memorandum of the 3rd of January 1884. Speaking generally, the Financial Commissioner regards the fluctuating system as one to be used *only where it cannot be dispensed with, i.e.*, in tracts where it is demonstrable that a fixed assessment which shall be fair to the State cannot be worked without disaster to the subject. The mere fact that the conditions of agriculture are of a fluctuating character (as where are they not?) is not, in the Financial Commissioner's opinion, sufficient justification for the introduction of a fluctuating assessment. Before such an assessment is sanctioned, it must be shown, not only that the fluctuations are very severe, but that the other conditions are such as to make fixed taxation undesirable. In the present case the Financial Commissioner thinks it clear that no pressure would have been used to induce the people to agree to a fluctuating system of assessment, if the recently constructed irrigation works had been completed before the tract was re-assessed. But the practical question for consideration is not this, but whether the fluctuating system being now in force, it is desirable to abolish it or modify it before the conditions of the new irrigation have become so far established as to make it possible to frame satisfactorily a fixed assessment which shall be fair both to the people and the Government, or before the questions already discussed as to the manner in which Government shall assert its claim to tax the use of the river water have been finally considered and answered. After full consideration, Colonel Davies is of opinion that it is advisable to maintain the present fluctuating system until we can be quite sure that it can be replaced by another system as good or better; and of this Colonel Davies at present sees no immediate prospect. He, therefore, still adheres to the conclusion expressed in this office letter No. 9452 of 5th November last, that it would be premature to pronounce the irrigation of the Hethár tract assured, and that it is advisable to test the working of the new canals through two seasons at the least, before we consent to discuss the advisability of changing the present fluctuating system of assessment in this tract.

8. If the fluctuating system be maintained, it is necessary to consider at what rates the land irrigated from the Fázilwah, and the small area in the Hethár which is irrigated from the Mubárakwah, shall be assessed. In the 8th paragraph of your No. 183 S. it is assumed that the lowest possible rate is

* *Cf.* principally Commissioner Hissár's No. 11 of 1st January 1884 and the two enclosed memoranda, also Commissioner of Settlements and Agriculture's No. 7 of 4th January 1884 and enclosure.

that fixed for well lands bearing a single crop, *viz.*, rupee 1-8-0 per acre. But in his No. 7 of 4th January last, the Commissioner of Settlements and Agriculture has given reasons for thinking that the canal lands must be assessed lower than well lands. And in his No. 55 (which is enclosed with the letter last quoted) Mr. Wilson states his opinion that the flooded land rate of rupee 1-4-0 per acre would be the appropriate one for these canal lands. The Financial Commissioner has concluded, after attentive consideration, that (apart from any concessions which may be granted in recognition of the improvement made by the constructors of the canal) the proper rates to be imposed on the lands irrigated from these two canals in the Hethár tract are—

	R. A. P.
Churál, Masar, Methrá ...	0 12 0
Other crops ...	1 4 0

And, in recognition of the efforts made by the people to improve their irrigation, Colonel Davies recommends that all canal-irrigated lands, recorded at Settlement as either baráni or waste, shall pay only half the above rates for ten years, dating from kharíf 1883, if the existing system of fluctuating assessment should so long continue. These proposals are very much more liberal than those recommended by Mr. Wilson in his letter No. 55 already quoted. On the other hand, they fall short of the concessions which have been recommended by Colonel Grey in his No. 313 of 5th December and in the memoranda received with his No. 11 of 10th January last. Colonel Davies considers that in cases of this kind it is both just and politic to give very liberal terms. He considers that the concessions which he has above proposed will be abundantly fair to the people; and I am to point out that, as near as may be, they agree with the terms of protective pattahs granted to the constructors of private irrigation works, as laid down in the first and second paragraphs of this office Book Circular No. XIV of 1881.

9. In order to complete the discussion of this branch of the subject, it is necessary to consider whether, if the present fluctuating system of assessment be abolished, it may be replaced by the fixed assessment framed by Mr. Wilson before the recent development of irrigation, or whether it would not be necessary to re-assess the tract with regard to its present resources. In regard to this question, I am to invite attention to the 12th paragraph of Mr. Wilson's letter No. 55 already referred to, in which that officer states his opinion that, if the system be changed, his village assessments must be revised and redistributed in accordance with the altered conditions of this tract. Colonel Davies thinks there can be no doubt of the correctness of this opinion; and if the present Settlement agreement be broken, there appears to be no reason why the new assessment should be based on the assets as they formerly existed, instead of as they exist at present. But, if a fresh assessment were made, the villagers would of course be entitled to favourable treatment of their canal-irrigated lands up to the expiry of a term of 10 years from the date of the construction of the canal. Colonel Davies has, however, already expressed his opinion that the new conditions are not yet sufficiently established for a satisfactory fixed assessment to be made. The irrigation from the Fázilwah, as Colonel Davies personally observed, is as yet only very partially developed. Colonel Grey estimates that its present extent will be more than doubled, and this in itself seems a good reason for not making any change in the system of assessment for some time to come.

10. The next question which the Financial Commissioner thinks it necessary to discuss, is the nature of the exemption from charges for water during 20 years which is sanctioned in the 5th paragraph of your No. 183 S. Colonel Grey (in his No. 186 of 18th July last) proposes to assure this exemption to the villages concerned by the issue of a "pattah" containing the Government orders. Before passing orders upon this proposal, the Financial Commissioner would be much obliged if Government would lay down distinctly from what rates and charges exemption is to be granted. Colonel Davies has already stated his opinion that, under the existing state of the law, neither owner's nor occupier's rate can be levied upon these canals; and further that royalty or seignorage for the use of the river water can only be taken under agreement

...nment is of course entitled to assess canal-irrigated lands at canal ...ed rates, just as it assesses well-irrigated lands at well-irrigated rates, ...his is in practice equivalent to the imposition of an owner's rate; ...hat rate is merely the difference between a wet and dry assess... which is treated as a separate entity for the convenience of the ...nts of the Irrigation Department. But if the exemption referred ...y Government is an exemption from assessment of the land at ...ated rates, then the Financial Commissioner desires to point out that ...xemption of this nature, for from 5 to 10 years, could be granted ...er the Circular of this office No. XIV of 1881; and thereafter in the ...nary course of administration the irrigated lands would not be re-assessed ...il the tract, as a whole, came under re-assessment. It does not, therefore, ...pear necessary to issue any special orders for an exemption of this kind. ...t if such orders be issued, Colonel Davies would suggest that the period of ...emption should be fixed, not at 20 years, but for the balance of the term of ... years for which the assessment of the Sirsa district has been sanctioned. ...rther, in regard to the agreements to be signed by the people, which are ...ferred to in the 5th paragraph of your No. 183 S., I am to draw attention to ...e closing paragraphs of Colonel Grey's No. 186 of 18th July 1883, and to ...nquire whether Government would desire to have any further agreements ...xecuted in supplement of the clause in the Wájib-ul-arz therein referred to.

11. The last question for consideration is the relative advantages which the new irrigation will confer (under all the existing circumstances of the case) upon the Hethár and Utár lands. The answer to this question is somewhat difficult until Government has finally decided the course which is to be taken in regard to the imposition of a royalty or owner's rate, and also the nature and extent of the exemption from rates and charges which is to be granted for twenty years or for the balance of the twenty years for which the new District assessments have been sanctioned. But on the view of the case which is taken by Colonel Davies, and as Government has promised the free use of water for a term of years in the Mubárakwah, and as the canal has been excavated by the people upon this understanding (as is explained by Colonel Grey in the 16th paragraph of his memorandum of 2nd January last), the Financial Commissioner does not see how some inequality in the present benefit accruing to the Hethár and the Utár can possibly be avoided; and as, moreover, Government has more than once accepted this inequality as inevitable, (paragraph 5 of Punjab Government's No. 16 of 10th March 1883, and paragraph 5 of the letter under reply), the Financial Commissioner considers that nothing can be done to remedy it until the period of exemption from charge for water used on the Mubárakwah has expired. In fact, the only methods to secure present equality are to sacrifice Government claims in the Hethár, or to impose fresh charges upon the Utár, and both these courses appear to be interdicted for sound reasons.

12. In his letters, which are marginally noted, Colonel Grey has submitted proposals for a third canal still further removed than the Mubárakwah from the course of the river. It is intended to remodel the Punjawah (one of the Mamdot canals in Ferozepore), at a cost of Rs. 8,686, so as to give a discharge of 500 cubic feet per second. From a spot, near the tail end of this canal, it is proposed to lead out a new branch, to be called the Shokatwah, with a discharge of 250 cubic feet per second. This branch will run for 8 miles in the Ferozepore district; and in regard to this part of its course, orders are not required. But it is proposed to extend the canal for 11 miles further into the Fázilka tahsíl, and perhaps eventually as far as the Baháwalpur border. The length of 19 miles, which has been already planned, is estimated to cost Rs. 13,211, and it is proposed that the work should be made over for construction as a private speculation to the Nawáb of Mamdot, who would engage to sell water to irrigators at the following rates, *viz.*:—

Nos. 313 of 5th December 1883, 325 of 20th December 1883, and 12 of 7th January 1884. *Cf.* also No. 204 of 7th August 1883, and No. 16 A. of 18th January 1884.

Sha

A. When the canal passes through the lands of any village ... per acre for flow, and Re. 0-8-0 per acre for lift ...

B. When the canal does not pass through the lands of a village, double the above rates.

In addition to these rates, six pies per acre will be chargeable as dues for Patwárís and Mírábs. These terms are somewhat rough; but attached to them is an important proviso, stipulating that the rule of conduct, both for the Nawáb and for the irrigators, is to be that now in force on the existing Mamdot canals. The Mamdot authorities are also willing to bind themselves never to charge more than Rs. 2 per acre for water under any circumstances. The difference in rates for the two species of villages is intended as a rough measure of compensation for the voluntary cession of land occupied by the canal. The Financial Commissioner considers that the compensation so given is excessive. Either the Nawáb should buy the necessary land and charge equal rates to every one, or the Ferozepore rule should be adopted, under which the individual owner who gives land for the canal receives free irrigation for his individual holding.

13. Under these conditions, it is now necessary to consider what security there is for the interests of the irrigators who pay revenue to Government, and for the related interests of Government itself. In the first place the Financial Commissioner considers that, if the Nawáb be allowed to construct this canal, the rates at which he is to charge for the water in all British villages (whether Khalsa or Jagír) must be fixed, and must not be raised without the consent of Government. What these rates should be is a more doubtful question. Those proposed seem to be much higher than those in force in Ferozepore, where the people construct and manage their own canals. But this is perhaps natural, and the Nawáb of Mamdot cannot be expected to engage for the construction of this canal without some reasonable expectation of a fair profit on his outlay. As to the rates charged on the existing Mamdot canals (with which comparison could properly be made) the Financial Commissioner has no exact or authentic information. Mr. Wilson, in his letter No. 55, already referred to, estimates that the introduction of irrigation into the Utár would raise the net value of the crops by Rs. 3 per acre. Judged by this standard, a general rate of Re. 1-8-0 per acre for flow, and 12 annas for lift, irrigation would seem to be fair rates so far as the capacity of the people to pay at present is concerned; and as the villagers appear to be willing to pay the rates proposed by Colonel Grey, that willingness is perhaps some proof that those rates are not regarded as unfair.

14. But either set of rates is in all probability much more than sufficient to give the Nawáb a fair profit on his outlay. They would, therefore, divert to the Nawáb's treasury some part of the income which might eventually have been secured for Government in the shape of land revenue or owner's rate. Indeed, if Mr. Wilson's calculation be correct, the direct benefit to Government in the shape of increased revenue could not (under the operation of the rates for water proposed) be very extensive. But this question is again complicated by the proposal which has been made to charge royalty on all water abstracted from rivers for private canals. Of course, if the Nawáb be charged a royalty, Government can by this method fix its own terms. But the Financial Commissioner has already expressed his opinion that, in the present state of the law, royalty cannot be charged. Even if the law were changed, Government would probably hesitate to charge royalty on this canal, seeing that six other Mamdot canals already exist on which no royalty has ever been paid or demanded. And it must always be remembered that the Nawáb is under no compulsion to make this canal. The terms upon which he may consent to undertake the work must be matter of bargain and not of dictation.

15. Another question which requires consideration before this project can be sanctioned, is the security which exists for the reasonable permanency of the irrigation. Apparently the only security under the proposals now made is the Nawáb's self-interest. This is in itself an uncertain quantity, and liable to be influenced by a very great number of unforeseen causes. At present the Utár villages in their unirrigated condition cannot support a large population. But after a few years of irrigation, there can be little doubt that the population would increase largely. If thereafter the canal arrangements were

suddenly thrown out of gear, and the tract became again dependent upon local rain-fall, considerable hardship would necessarily result before the population could adjust itself to the new conditions. This risk would have to be guarded against, and the only way to do this effectively, would be to secure for Government by agreement the right to step in and assume the management of the canal, giving to the Nawáb compensation for this outlay on construction and maintenance. It is very doubtful whether the Nawáb would consent to such an agreement, and the Financial Commissioner feels sure that Government would hesitate before making such a proposal to him.

16. On the whole, looking at the many difficulties, legal and practical, connected with the carrying out of this scheme, the Financial Commissioner is not prepared to support it. There is apparently no urgent need for this third canal. This part of the Sirsa district is very thinly populated, and is now fairly protected by the two canals which have been already designed and carried out by Colonel Grey. There is, moreover, reason to doubt if the proprietors of the villages who are to benefit from the irrigation proposed to be provided are at all eager to obtain it. Colonel Davies, therefore, thinks, that it will be wise to wait and see how the Mubárakwah works, and how far it provides for the wants of the Utár circle before taking up this, or the alternative joint-stock project suggested by Colonel Grey.

No. 24, dated Lahore 7th July 1884.

From—H. C. FANSHAWE Esquire, Officiating Junior Secretary to Government, Punjab.

To—The Officiating Junior Secretary to Financial Commissioner, Punjab.

I AM directed to acknowledge the receipt of your letters Nos. 7 and 18 C. of the 24th and 30th April last regarding the inundation canals constructed under the direction of Colonel Grey, C.S.I., in the Fázilka tahsíl of the Sirsa district, and in reply to convey the following orders of the Lieutenant-Governor.

2. The correspondence in the present case has become somewhat complicated, owing to the number of letters which have passed between the Financial Commissioner and Colonel Grey on the subject, and to the fact that in replying to the letter of this office No. 183 of the 7th July last, the various questions for discussion have not been treated by you in the order adopted in that communication. It will, therefore, be convenient, in order to prevent any confusion or misunderstanding in future, to recapitulate briefly the issues which have been raised in the correspondence relating to the Fázilka, canals before noticing the facts now reported regarding them, and conveying orders upon these in detail.

3. In paragraphs 2—7 of the above letter, the sanction of the Lieutenant-Governor was conveyed to the commencement of work on the Mubárakwah canal, on the understanding that the conditions on which the work was to be undertaken, were the same as those in force in the Ferozepore district, and that the management of the canal would placed under the special Ferozepore Irrigation staff. It was also said—

(1) that it was desirable that a formal agreement should be drawn up between the Nawáb of Mamdot and the other irrigators on the canal regarding their respective shares in the water;

(2) that in all cases in future a light payment should be imposed, in order to mark the rights of Government over the water, though in the present case the Lieutenant-Governor consented to waive all Government rights to payment for a period of 20 years, as had been promised by Colonel Grey to the villages making the canal; and

(3) that contributions from district funds towards such works as inundation canals should not in future be made as out-and-out gifts, but should be considered as advances, the local body making the advance, retaining an interest in the work made, if necessary, until the sum was recovered.

4. In paragraphs 8 and 9, it was pointed out that the existence of the fluctuation system of assessments in the Hithár tract made the payments for which the irrigators of the Hithár village were liable on account of land revenue and canal maintenance charges far greater than those of the Utár tract, and it was suggested (1) that a low acreage rate of 6 or 8 annas should be imposed in the latter, in order somewhat to equalise matters (it being intended that the general exemption granted by the Government for 20 years should be modified as far as such a low water-rate was concerned), and to (2) that only half fluctuating rates should, for a period to be fixed by the Financial Commissioner, be levied in the Hithár tracts. It was distinctly re-asserted that the fluctuating assessment of the Hithár tract would not be abolished until canal irrigation became perfectly assured, and it was finally pointed out that, whatever system was adopted, the Government could not consent to forego any increase of income which it might reasonably expect from fluctuating assessments because of the development of canals, and that it must be made perfectly clear to the people that the right of Government to levy water-rates or to take royalty in the shape of water-rate, was waived for 20 years only, and that no indefeasible rights of user could be acquired by the people from such waiver.

5. From the correspondence forwarded with your letter under reply, it appears that the Mubárakwah canal has been completed, and that the system introduced on that canal, and on the Fázilwah is the same as that prevailing in the Ferozepore district, which is fully described by Colonel Grey in his draft Canal Manual, which the Lieutenant-Governor hopes to see issued shortly. It also appears that the canals have been placed under the management of the special Irrigation staff of the Ferozepore district, and that the Ferozepore district fund has accepted its share of the extra cost of the addition to that establishment proposed by Colonel Grey. A contribution up to a limit of $1\frac{1}{2}$ annas per acre on all lands under the fluctuation assessment which may be irrigated by the canal will therefore be due from the Government to the canal fund in accordance with paragraph 7 of my letter No. 183 of the 7th of July last. A formal agreement forwarded under cover of the Commissioner's letter No. 23 of the 24th January 1884, has been executed between the Nawáb of Mamdot and the other irrigators of the Mubárakwah canal. This agreement, which is recommended for acceptance by the Financial Commissioner, is approved by the Lieutenant-Governor, and is returned herewith for record in the Sirsa district office. The Financial Commissioner agrees with Colonel Grey that there is no necessity to give the District Committee an interest in the canals; but Colonel Davies proposes that the grant-in-aid of Rs. 5,000 made towards the construction of the Mubárakwah canal from district funds should be gradually recovered from irrgators by low rates to be levied for a period of five years. This proposal is approved by the Lieutenant-Governor, and arrangements can be made to carry it out accordingly.

6. These orders dispose of all minor questions which were raised in my letter No. 7. of July last, and it now remains to consider the more important matters to which the major part of your present letters are devoted, namely, the payment of some kind of royalty on account of irrigation from canals such as those constructed in the Fázilka tahsíl, and the inequality existing between the Hithár and Utár tracts. The question of a third canal started by Colonel Grey, and called the Shokatwah, also requires separate orders.

7. With reference to the first of these questions, namely, the levy of a sort of royalty, I am to point out, in the first place, that in paragraph 5 of my letter No. 183 it is distinctly said that a light payment, to mark the rights of Government over the water, should be imposed in all cases *in future only*, and that, owing perhaps to the fact that the subject was not treated so clearly as it might have been in the above communication, some misapprehension appears to have arisen regarding it. The Lieutenant-Governor does not altogether accept the views of the Financial Commissioner regarding the legality of the levy of royalty under the existing Canal Act. But as there appears to be room for doubt on the point, His Honor agrees with Colonel Davies, that it will be well to remove it by express provision under the revised Canal Act; and I am to ask that the matter may be separately discussed when the Bill for the

amendment of Act VIII of 1873 is submitted for consideration. It was intended in the present case, that the so-called royalty should form part of the water-rate, and that it should be levied at the lowest rate possible, at one pie per acre even, or by declaring a small fraction of the land revenue to represent such payment. It is necessary that the *pattas* which will be granted to the irrigating villages of the Fázilwah, in order to specify the agreement made with them by the Government, should contain a clause giving the Government power to control the canals; and this power being secured, Government could legally impose water-rates on the lands irrigated in accordance with the existing provisions of the Canal Act—a condition which should also be asserted in the *pattas*. In the present case, the Lieutenant-Governor has consented to a complete exemption of payment of water-rates or royalty for a period of 20 years, and no further stipulation need, therefore, be made as regards the Fázilka canals. But in all future cases, when permission to use water is accorded to villages, the payment of a pepper-corn water-rate, in the shape of a royalty, should be demanded, the agreement made between the irrigators and Government being of such a nature as to give the Government proper control over the canal under the Canal Act; and I am to request that, in all instances hereafter, this may be carefully seen to. If, under the revised Canal Act, a power to levy a royalty, independently of water-rates, is accorded, that will no doubt simplify matters. If not, the Government will be able to maintain its rights indefeasibly by the levy of a pepper-corn water-rate which, to all purposes and intents, will be a royalty. I am accordingly to request, that the Financial Commissioner will direct the Deputy Commissioner to draw up *pattas* to be issued after approval by the Commissioner and Financial Commissioner to every village in which the agreement between Government and the irrigators should be clearly specified, in order to prevent all possibility of misunderstanding hereafter. The power of Government to control the canals, and the right of Government to levy water-rates, must be clearly asserted in the agreement; and it should be specifically stated that Government has merely waived its right to levy water-rates for the period of settlement, which period, as recommended by Colonel Davies, may be substituted for the period of 20 years originally promised. It should further be stated that, by such waiver, no rights whatsoever will be acquired by the people to receive water after the above period, otherwise than on payment of such rates as Government may fix, and that, after the expiry of such period, the Government will demand such water-rates as it may see fit. A counterpart of each *patta* should be carefully filed in the district office.

8. With reference to the second question, namely, inequality between the gross payments which will be made by the inhabitants of Hithár and Utár tracts, the Lieutenant-Governor accepts the conclusion of the Financial Commissioner, that there is no help for this, and that matters must be left as they are. I am to point out, however, that this conclusion cannot be considered altogether satisfactory, and that it is an instance of the inconvenience of hurrying on these matters before the full facts of the case are clearly placed before Government—a procedure to which the Lieutenant-Governor will be obliged to absolutely refuse sanction in future. The fluctuating assessments of the Hithár tract will be maintained for three or four years at least until it is proved by actual experience, that previous fluctuations of cultivation have been removed by the development of inundation canals. If after that period the Financial Commissioner thinks that he can safely recommend that a fixed assessment be substituted for the fluctuating demand, proposals for this purpose may be submitted. There can be no doubt that, should fluctuating assessments be hereafter abolished, the villages which are now under that system will have to be re-assessed on their assets as then existing, and that it will not be possible merely to declare a fixed assessment in the place of a fluctuating demand on the assets, as recorded at the late settlement. The Lieutenant-Governor accepts the proposal of the Financial Commissioner, that the Hithár villages should pay half fluctuating assessment on canal lands which were waste or unirrigated at the recent settlement for a period of 10 years only, and that the rates fixed for the assessment of canal irrigated lands shall be—

		Rs.	A.	P.	
For churál, masar, methra	...	0	12	0	annas per acre.
For all crops	...	1	4	0	ditto.

9. As regards the Shokatwah canal, which has been commenced by Colonel Grey without the previous sanction of Government, I am to state that His Honor does not understand the arrangement which has been made with the Nawáb of Mamdot, and to ask that a full and clear statement of the whole history and facts of the case may be separately submitted. From the report submitted under your letter No. 18 C. of the 30th April, it is not certain whether the scheme adopted is that by which the Nawáb alone was to undertake the construction of the canal, and charge water-rates for the water, or that by which he was to be a joint shareholder with the villages combining to construct the canal with him. The Lieutenant-Governor will suspend the issue of final orders regarding the arrangements to be made for this canal, until receipt of the further report; but I am to say that, if the first scheme proposed by Colonel Grey is carried out, His Honor agrees generally with the recommendations made by Colonel Davies regarding it, and I am to ask that the Commissioners of the Lahore and Hissár Divisions may be consulted regarding the amount of water-rates to be levied by the Nawáb before they are finally fixed.

10. With reference to the remarks contained in paragraph 14 of your letter No. 76 of the 24th April, that Government would probably hesitate to charge royalty on the Shokatwah canal, seeing that six other Mamdot canals already exist on which no royalty has ever been paid or demanded, I am to invite your attention to the correspondence ending with the letter of this office No. 1411 of the 4th October 1875. It is understood that the concessions made to the Nawáb of Mamdot in the Ferozepore district, are precisely the same as those which have been made to the villagers who combined to dig the canals under the direction of Colonel Grey, and that these concessions cease absolutely on the termination of the present settlement of the land revenue which is about to expire. At the close of that period, the Government is perfectly free to demand such royalty from the Nawáb of Mamdot as it may see fit, and, as far as the Lieutenant-Governor is aware, *it has always been intended to demand such payment, just as it has always been intended that the villages above referred to should, on the expiry of the present settlement, pay a low water-rate of some description, unless their lands are assessed at fluctuating canal rates, as in the Mooltan and Muzaffargarh districts. It appears from the papers of this office, that there can be no doubt upon this point, and that the matter is perfectly clear.* But if the Financial Commissioner feels any doubt regarding it, the Deputy Commissioner of the Ferozepore district should be requested to submit a full report upon the subject, in order that the matter may be at once placed beyond question.

11. In conclusion, I am to say that the Lieutenant-Governor greatly regrets that Colonel Grey should, by his precipitate action in the case of the Shokatwah canal, have made it necessary for the Lieutenant-Governor to qualify the unstinted praise which Colonel Grey would otherwise have deserved in connection with the development of the canals in the Fázilka district. Colonel Grey ought to have been aware, from his experience in the matter of the Mubárakwah canal, that there was no disposition on the part of the Government to hamper him, but that, on the contrary, the Lieutenant-Governor was willing and ready to strain many points, in order to encourage and help on reasonable schemes. His Honor cannot consider that there was any justification whatever for Colonel Grey's independent action in the matter of the Shokatwah; and his precipitate procedure in this case makes it necessary that the Lieutenant-Governor should now distinctly forbid him to do anything of the kind again, without first obtaining the sanction of the Local Government.

Copy of No. 363 dated Sirsa, 15th October 1884.

From—Lieutenant-Colonel E. C. CORBYN, Deputy Commissioner, Sirsa,

To—The Commissioner and Superintendent, Hissár Division.

IN compliance with your instructions in No. 227, dated 18th August last, and Financial Commissioner's No. 5805, dated 1st idem, and the printed correspondence therewith received, on the subject of the inundation canals of the Fázilka tahsíl in this district, I have the honor to state :—

(1) That the agreement returned by you and referred to in para. 2 of Financial Commissioner's letter has been duly filed with the record of the Mubárakwah canal.

(2) That Rs. 5,000 advanced by the District Committee towards the construction of the Mubárakwah canal are proposed to be recovered from the irrigators in five instalments, commencing from 1885 as per list of villages rendered liable for the payment thereof.

(3) That a form of *pattáh*, embodying the exemption of payment of water rates till the completion of the term of Settlement, as noted in para. 7 of Government letter No. 24, dated 7th July 1884, is herewith submitted for your approval.

(4) That the rates for the canal irrigated land specified in para. 5 of Financial Commissioner's No. 5805, dated 1st August 1884, have been published to the irrigators whose lands are situated in the Fázilka Hitár which is under the system of fluctuating assessment.

(5) That the working of the fluctuating assessments in the Fázilka Hitár will be noticed in the Annual Revenue Report and at the close of the rabi harvest of 1886-87; the Extra Assistant Commissioner and the Tahsíldár of Fázilka having been required to pay due attention to this matter, and furnish the information for the reports to me.

(6) That a statement of the history of the Shokatwah canal, as furnished by Babu Mya Das, Extra Assistant Commissioner, in charge of inundation canals in the Ferozepore district, under whose immediate supervision the canal is being constructed, is herewith submitted.

List of villages in Tahsíl Fázilka of the Sirsa district from which it is proposed to recover Rs. 5,000 advanced by the Sirsa District Committee towards the excavation of the Mubárakwah canal.

No.	Name of village.	Area in acres.	Amount advanced from the District Fund.			*Instalments proposed for the recovery of the advances.*					Remarks.
						In 1885.	1886.	1887.	1888.	1889.	
			Rs.	A.	P.	Rs.	Rs.	Rs.	Rs.	Rs.	
1	Taropari	507	317	...	...	65	63	63	63	63	
2	Ahél	150	91	...	...	19	18	18	18	18	
3	Jamálki	75	46	...	...	10	9	9	9	9	
4	Lakheki utár	250	152	...	...	32	30	30	30	30	
5	Ladhuka	475	280	...	...	56	56	56	56	56	
6	Bahek	300	182	...	...	38	36	36	36	36	
7	Theh Qalandar	450	275	...	...	55	55	55	55	55	
8	Chak Hasta	320	200	...	...	40	40	40	40	40	
9	Chand Mári	250	151	...	...	31	30	30	30	30	
10	Pherwanwala	100	60	...	...	12	12	12	12	12	
11	Turkanwála	522	326	...	...	66	65	65	65	65	
12	Lashkardín	100	60	...	...	12	12	12	12	12	
13	Rám Nagar	300	182	...	...	38	36	36	36	36	
14	Abdul Khálik	150	91	...	...	19	18	18	18	18	
15	Rána	100	60	...	...	12	12	12	12	12	
16	Badha	25	15	...	...	3	3	3	3	3	
17	Kulai	25	15	...	...	3	3	3	3	3	
18	Jorki	50	30	...	...	6	6	6	6	6	
19	Panchanwalí	500	303	...	...	63	60	60	60	60	
20	Choharanwalí	50	30	...	...	6	6	6	6	6	
21	Koranwala	200	121	...	...	25	24	24	24	24	
22	Banwala Hanwanta ...	160	100	...	...	20	20	20	20	20	
23	Keruwala...	203	127	...	...	27	25	25	25	25	
24	Fázilka Municipality ...	402	250	...	...	50	50	50	50	50	
25	Jundwála Kherta ...	150	91	...	...	19	18	18	18	18	
26	Khole Mahomed... ...	254	159	...	...	35	31	31	31	31	
27	Sabuwána	254	159	...	...	35	31	31	31	31	
28	Mahomedpur	261	163	...	...	35	32	32	32	32	
29	Nilánwali...	50	30	...	...	6	6	6	6	6	
30	Hirnáwali	50	30	...	...	6	6	6	6	6	
31	Kabúl Shah	150	91	...	...	19	18	18	18	18	
32	Lakhewálí Rohi... ...	160	100	...	...	20	20	20	20	20	
33	Khenwáli...	160	100	...	...	20	20	20	20	20	
34	Bandiwáli	175	106	...	...	22	21	21	21	21	
35	Khertánwali	175	106	...	...	22	21	21	21	21	
36	Shehtírwála	233	150	...	...	30	30	30	30	30	
37	Murádwala	114	71	...	...	15	14	14	14	14	
38	Khánwala	100	60	...	...	12	12	12	12	12	
39	Siwána	100	60	...	..	12	12	12	12	12	
40	Dipulána	50	30	...	...	6	6	6	6	6	
41	Khertawála	50	30	...	...	6	6	6	6	6	
	Total	8,150	5,000	...	...	1,028	993	993	993	993	

Sd. E. C. CORBYN,

SIRSA, DEPUTY COMMISSIONER'S OFFICE,
The 15th October 1884.

Deputy Commissioner.

Statement of the history of the Shokatwáh canal as furnished by Babu Mya Das, Extra Assistant Commissioner in charge of the Inundation canals in the Ferozepore district, submitted in accordance with para. 9 of the Punjab Government letter No. 24, dated 7th July 1884.

Shokatwáh is the third canal in the Fázilka tahsíl of the Sirsa district. The first two canals constructed under the directions of Colonel Grey irrigate as follows:—

Fázilwah irrigates the *hittár* chaks, and Mubárakwah irrigates not more than the half of the *uttar* chaks of the Fázilka tahsíl. As to the remaining *uttar* chaks, Colonel Grey, C.S.I., asked the people who generally possess *bunjar* lands, whether they would make another canal for their dry chaks; they said they were not able to do so but that if the Nawáb of Mamdot would extend his canal "*Punjewáh*" on to their chaks at his own cost, and charge a fair water-rate, they would be glad to pay, and accordingly an arrangement has been accorded between the said *ábnoshes* and the Nawáb of Mamdot, and a deed was registered on 28th January, 1884, at Fázilka, as follows:—

1. That the Nawáb was to make the canal entirely at his own cost.

2. The Nawáb may charge one per cent. for every irrigated acre to such *ábnoshes* as possess the lands of his jágír through which the canal is to pass.

3. That Rs. 2 per acre to be charged for all other lands that may be irrigated, &c.

4. That the above two rates are for flow water, and that half of it, *viz.*, Re. 0-8-0 and 1-0, respectively, will be charged for *jhalár* or lift. It may here be stated that the first ten miles of Shokatwáh (*i.e.*, the new branch) passes through the Nawáb's own jágír and the remaining 8 miles through the joint jágír, and that only one chak, namely *Táliwála*, in the Fázilka tahsíl is free from the Nawab's jagír. Under the above arrangements, Shokatwah has been designed as follows:—

The Punjewah canal (*vide* Mr. Fanshawe's printed report of 1874-75, page 41) has been widened and deepened down to its 12th mile at a cost of Rs. 8,674, and at this point its old branch, namely *Isháńwáh*, is led out from the right bank (*vide* Major Grey's printed report of 1876-77, page 61,) and from the left bank of Punjewáh the new branch, *i.e.*, Shokatwah, is to be led off. It is to be 18 miles long and 30 feet wide at its mouth, with a bottom breadth of 3½ feet, and flood level of 4½ feet.

The cost of this new excavation, a portion of which has already been done in the Ferozepore district, is to be Rs. 9,192 and Rs. 4,019 for *pasailing* or embankments; thus Shokatwah will altogether cost the Nawab Rs. 21,885 and as it is desirable that the remaining work on Shokatwáh should be completed during this cold weather, an early sanction is solicited; otherwise, as the Nawáb has widened and deepened his old canal, namely Punjewah, at a considerable cost in anticipation of taking off the Shokatwah from it as a branch, the main body of the canal will be much damaged, considering that the water will not be distributed according to the *original design*.

I can add nothing to the account furnished by Extra Assistant Commissioner Mya Das, as I have neither seen the work, nor is there any record of the construction of the canal in this office.

Patta or agreement for supply of water from the Mubárakwah-Fázilwah inundation canal, for irrigation of lands of village in tahsíl Fázilka in the Ferozepore district, made this—day of 188 and entered into on behalf of the Secretary of State for India with son of caste Lambardár of tahsíl Fázilka, Zila Ferozepore.

Whereas an inundation canal, named Mubárakwah, has been cut on your application from the Sutlej at a point in the Mamdot illaqa, for irrigation of lands of villages in the jurisdiction of the Fázilka tahsíl in the Ferozepore district.

And whereas it has been excavated by the personal labour and at the sole expense of proprietors themselves of certain estates through which it passes and whose areas it irrigates.

And whereas from May 1884 it has been opened, and has supplied sufficient water for irrigation, and further distributaries, water-courses and field channels, for the conveyance of water to fields will from time to time be made, and water will every year be supplied to the extent of the capability of the canal, and whereas both the kharíf and rabi harvests will be benefited thereby, and the produce of the land will be increased, this *patta*, containing the following conditions, is granted to you in pursuance of letter No. 5805, dated 1st August 1884, of the Financial Commissioner, Punjab.

1st.—That the management of and the control of the said Mubárakwah, Fázilwah canal shall rest with Government.

2nd.—That no water-rate or royalty will be taken from you from kharíf 1884, (Sambat 1941) to the termination of the current Settlement for the supply of water made by means of distributaries, water courses and field channels from this canal.

That Government, however, has the power legally to impose water-rates on the land irrigated in accordance with the existing provisions of the Canal Act: that Government will not exercise this right during the currency of the present Settlement: but that you acquire no right whatsoever to receive water after the

expiry of the current Settlement, otherwise than on payment of such rates as Government may fix: that after the expiry of the current Settlement, Government will demand such water-rates as it may see fit.

3rd.—That a rateable share of the expenses incidental to management and control of the said canal, such as payment of salaries of certain officials, chief canal officer, patwarís' fees, and for the clearance of the canal, repairs of dams or bunds, banks and sides; and for making more water-courses and field channels, and of other expenditure of a miscellaneous nature connected with the working and maintenance of the canal, and the extension of its benefits, &c., the necessity for which may hereafter arise, will be payable by you.

4th.—That you will be bound by the terms of the village wajíb-ul-arz as recorded at settlement where not inconsistent with this agreement. Bearing in mind the terms of the above stipulations, this *patta* is granted to you on behalf of Government as a Sanad.

No. 268, dated Jullundur, 1st December 1884.

From - Lieutenant-Colonel G. GORDON YOUNG, Commissioner and Superintendent, Jullundur, Division,
To—H. MAUDE Esq., Senior Secretary to Financial Commissioner, Punjab.

I HAVE, within the last few days only, received from Hissár the file of correspondence relating to the Fázilka canals, and as I find a somewhat urgent reference to be pending, and a note left on record by Mr. Coldstream indicates what he had to say on the subject, and I have myself no personal acquaintance with the question, I have availed myself of Mr. Coldstream's note, and have now the honor to reply to your No. 5805, dated 1st August last, and trust it will be found that my letter contains what is required by the Financial Commissioner.

2. In forwarding your letter quoted above, with copy of printed correspondence to the Deputy Commissioner of Sirsa, the Commissioner of Hissár directed as follows:—

(1) not important.

(2) that proposals should be submitted for recovering the Rs. 5,000, advanced by the District Committee to the Mubárakwah irrigators.

(3) that a form of *patta* on half margin should be submitted.

(4) that the rules regarding the Fázilka Hithár, as laid down in para. 5, should be notified, and steps taken to carry out the orders.

(5) that attention should be paid to the instructions for the working of the fluctuating assessment.

(6) that a report regarding the Shokatwáh canal be submitted.

3. The Deputy Commissioner has now complied with these instructions, and a copy of his reply, No. 363, dated 15th October, is enclosed. On this letter Mr. Coldstream has recorded a note, to the effect that it is not clear whether the instructions regarding the levy of half rate for ten years on canal lands returned as waste or unirrigated in villages under fluctuating assessments has been observed or notified to the people. I have, therefore, to-day addressed the Deputy Commissioner on this subject, requesting him to explain the orders contained in your para. 5 to the persons concerned.

4. As to the recovery of loan of Rs. 5,000, the orders were to recover it by a low irrigation rate to be levied for five years, whereas the Deputy Commissioner has only reported the lump sum to be paid year by year by each village; but it seems probable he intends that these instalments should be distributed within the villages over the irrigated area year by year by a *báchh* to be made by the people themselves, and to be paid with the land revenue. The Deputy Commissioner has been asked if this is what he proposes, and if not, to explain his proposals. The course suggested appears to me the proper one.

5. The *pattah* as corrected by Mr. Coldstream, is submitted herewith for the favor of examination and amendment, where this is considered necessary; and a translation accompanies.

6. Lastly, the account of the Shokatwáh canal, as given by Babu Maya Das, and which appears to be a *resumé* of the previous official correspondence, and to which I can add nothing, is enclosed; but I may draw attention to the closing remarks of the report, which indicate that, unless the extension called Shokatwah is rapidly put in hand, the main channel, which has been widened and deepened to meet its demands, will be damaged.

No. 852, dated 4th February 1885.

From—H. MAUDE, Esquire, Senior Secretary to Financial Commissioner,

To—Colonel GORDON YOUNG, Commissioner and Superintendent, Jullundur Division.

I AM directed to reply as follows, to your letter No. 268 of 1st December last, on the subject of certain matters connected with the new inundation canals in the Fázilka tahsíl.

2. In regard to the recovery of the sum of Rs. 5,000, advanced by the District Fund for the Mubárakwah, no further orders are required from this office. You will no doubt see that the orders previously given are carried out, and the result reported to this office for information.

3. The form of *patta* proposed for the irrigating villages on the Fázilwah and Mubárakwah is unsuitable. A revised form drawn up in this office is forwarded herewith for adoption.* Only Urdu copies will be issued, but a transliteration in the Roman character, and an English translation are sent for the use of your office.

* Urdu *patta*, 2 copies. Transliteration of Urdu *patta*, 2 copies. English translation of Urdu *patta*, 1 copy.

4. Further orders as to the Shokatwáh will be sent separately hereafter.

No. 101 A., dated Sirsa, 10th April 1884.

From—Lieut.-Colonel L. J. H. GREY, C.S.I., Offg. Commissioner and Superintendent, Hissár Division,

To—The Offg. Senior Secretary to Financial Commissioner, Punjab.

I FORWARD a report* on the Fázilka canals by the Deputy Commissioner, Sirsa.

* No. 99, dated 27th March 1884.

2. The report is that called for by paragraph 11 of Punjab Government letter No. 183 S., dated 7th July 1883, to your address, forwarded under endorsement No. 184 S.-188 B., of the same date.

3. The canals were finished on the following dates:—

Fázilwah 23rd June 1883.
Ditto enlargement and extensions, 9th April 1884.
Mubárakwah 31st March 1884.
The Shokatwah will be finished during May.

The khillats bestowed by Government, as per accompanying list, were this day distributed by me to the officials and others concerned in this work.

No. 99, dated Sirsa, 27th March 1884.

From—Lieutenant-Colonel E. C. COBBYN, Deputy Commissioner, Sirsa,

To—The Commissioner and Superintendent, Hissár Division.

Report on the Fázilka canals.

I HAVE the honor to submit a report regarding the Fázilwah, Mobárakwah and Shokatwah inundation canals in tahsíl Fázilka of this district, in compliance with Government letter No. 183 S., dated 7th July 1883, received with your No. 189 A., dated 19th idem. The information on this subject, as furnished, is submitted for each of the canals separately.

FAZILWAH.

Length and capacity for irrigation of Fazilwah.

2. The Fázilwah has a total length, with branches, of 52 miles, and bottom breadth at mouth of 50 feet, with irrigating capacity (as now remodelled in 1883-84) of 20,000 acres.

3. The cubic contents of the work now represent a total value of Rs. 11,292-15-7 only, as the use of depressions has effected a saving in excavation of a value of Rs. 12,000, and some cost has also been saved in utilizing the *debris* of four old zamíndári dams which have been restored for use on this canal.*

Value of the work.

4. The head of the canal is in Mauza Khubáyeh in Mamdot. It leads out of the same arm of the river Sutlej that feeds the Mobárakwah, about 6 miles below the head of that canal, and follows a dip in the ground for 1¼ miles into a *nalla* that runs down from Parbat-Singhwála, of which *nalla* the Mobárakwah utilizes 5¼ miles in its upper course (*see* pages 42-43 of Mr. Fanshawe's printed report of 1874-75). After joining this *nalla*, the Fázilwah follows it for 1½ miles, and is then taken out of it by the Jamálka dam, and led across a neck of high land for a ¼ mile into an old *dhund* which it follows for 4 miles to the Ghurka dam. This is an old dam thrown across this *dhund* some years ago at a cost of Rs. 3,000, and by which the *dhund* has been silted up. This dam has been restored, and the Fázilwah is continued on from it along the course of the old Padi channel for 13½ miles, past the old Shakru dam, up to the Alim Shah dam. For the first 4½ miles of the course in the Padi, from the Ghurka dam, there is more or less excavation. The Alim Shah dam is an old one, the effect of which, together with the Shakru dam before mentioned, was to silt up the Padi channel, which has, however, been now made useful with comparatively little cost in excavation, owing to the alignment adopted for the Fázilwah.

Head, course and direction of Fázilwah.

5. From the Alim Shah dam, the tail of Fázilwah is carried on for 3¾ miles to Karnikhera, and is there led out on to the *utár* or high tract in which it irrigated 983 acres in the villages Karnikhera, Muthianwáli, Pakka and Churiwáli in the first year of its working (1883).

Tail of Fázilwah.

6. From the Alim Shah dam is also led off the Kádirwah branch, 4½ miles in length, and a little above that dam the old bridge on the Okara road, under which the canal is led, is utilized as a sluice to feed two branches on the left and right banks respectively. Of these Shákh Awá is 5 miles in length and forms a loop of which the end is almost resting on the Fázilwah tail at mile 22. The Shákh Kikarwála on the right bank leads to the high lands of Mahtamnaggar, across an old depression which has been silted up by a dam constructed across it some years ago at considerable expense. Further up the canal, up to mile 12, many important distributaries have been led off as regularly designed branches, the uppermost being the Shákh Rána at the 12th mile.

Kádirwah and other branches and distributaries.

7. Finally, from just above the Ghurka dam an important branch canal, called the Rasúlwah, has been constructed to irrigate the high lands on the left of the Fázilwah, between it and the *utár*, for a distance of 7½ miles.

Rasúlwah branch.

8. The Fázilwah was commenced on the 16th March, opened on the 23rd June, and closed on the 5th October 1883. The construction of distributaries was commenced in July, and 8,237 acres were irrigated during 1883, and were included in the *báchh* at the Ferozepore *Jalsa Báchh* of 14th December 1883.

Time within which Fázilwah and its distributaries were constructed and the irrigation afforded in 1883.

9. The original cost of (or value of work done on) the canal was Rs. 5,571; but during January and February, 1884, it has been remodelled and enlarged, and branches have been constructed at a cost of Rs. 5,721-15-7. Thus the total cost up to 31st March 1884 is, as before stated, Rs. 11,292-15-7.

Original cost, and the cost of remodelling and enlarging Fázilwah, and of the construction of its branches.

* These dams were ignorantly constructed at different times for the purpose of raising water out of the above mentioned depressions when the floods used to reach them; but they had the opposite effect of silting up and disabling those channels.

MUBARAKWAH.

Time within which Mubárakwah was constructed, and cost of construction including branches.

10. The Mubárikwah canal was designed in March 1883, and commenced on 12th August 1883. It was completed on 28th February 1884, at a total cost, including all the branches (in value of work), of Rs. 27,682-11-6.

Length of Mubárakwah and its branches.

11. The total length, with branches, is 49¼ miles, and the bottom breadth at mouth is 35 feet.

Capacity for irrigation.

12. The irrigating capacity is 20,000 acres.

Course of Mubárakwah.

13. For the first 10 miles of its course it takes up the Buggawah canal (p. 42 of Mr. Fanshawe's report of 1874-75, and pp. 52 and 61 of Major Grey's canal report of 1875-76). The breadth of that canal was only 10 feet and its discharge 100 cubic feet per second—a capacity equal to 3,000 acres of irrigation. The alignment has been carried across the lower *danda* into the *Utár hak* of Fázilka, which it cuts diagonally, terminating almost at the foot of the upper *danda* near the Baháwalpur boundary.

Fázilwah and Mubárakwah canals how carried out.

14. The work on both canals was carried out on the Ferozepore system, and under guidance of Bábu Mya Dás and of the Ferozepore Canal establishment, under which they have both been included since 1st September 1883.

Special establishment employed, and work done by Muhammad Sadiq, Mohtamím, and Tahsíldár Basant Lál, commended.

15. A special Mohtamím was of course appointed for them, who has been included in the Ferozepore establishment. His name is Muhammad Sadiq, ex-kánúngo of Fázilka, who has carried out his duties with remarkable zeal and judgment. The people were cordially interested in the work, which circumstance, and the speed and completeness with which the work has been executed, are due to the energy, tact, local knowledge and popularity of Tahsíldár Basant Lál.

SHOKATWAH.

Irrigation by Shokatwah.

16. The Shokatwah is going to be the third canal in the Fázilka tahsíl. As already stated, Fázilwah irrigates the *Hithár Chaks*, and Mubárakwah is now ready to irrigate about half of the *Utár Chaks* of this tahsíl, and for the remaining *Utár Chaks* Shokatwah has lately been taken in hand.

Agreement recorded between *ábnoshes* of Shokatwah and Nawáb of Mamdot.

The *ábnoshes* of Shokatwah possess very poor lands, mostly *banjar*. Moreover, they suffer frequently from want of rain. An agreement has, therefore, been recorded between the *ábnoshes* and the Nawáb of Mamdot as follows :—

(1) That the Nawáb should make the canal entirely at his own expense, and

(2) That he can charge Re. 1 for every irrigated acre to those *ábnoshes* through whose land the canal will pass, and Rs. 2 per acre for all other lands that may be irrigated : half of these rates being chargeable for *jhalár* or lift water.

It may be stated here that ten miles of Shokatwah will pass through the Nawáb's jágír lands and eight miles through the joint jágír lands. Accordingly an agreement has been executed by the *ábnoshes* concerned, and the deed was registered on 25th January 1884. Thus, under the terms specified above, Shokatwah has been designed.

Direction of the Shokatwah with reference to the Punjehwáh canal.

18. The Punjehwah canal (a detailed account of which is given in Mr. Fanshawe's report of 1874-75, pp. 40 and 41) will be widened and deepened down to its 12th mile at a cost of Rs. 8,674. At the end of the 12th mile, the old branch of the Punjehwah, called Ihsánwah, is led out from the right bank—*vide* Colonel Grey's

report for 1876-77, page 61. The new branch, or Shokatwah proper, is led off from the left bank for 18 miles, with a bottom breadth of 30 feet at the mouth, and 3½ of cutting and a flood level of 4½ feet.

Cost of excavation.

19. The cost of this entirely new excavation is to be Rs. 9,192, and Rs. 4,019 for embankments. Thus the Shokatwah canal will cost altogether Rs. 21,885 including the widening and deepening of the Punjehwah.

Time within which the work will be done.

20. The work at the mouth of the Punjehwah was commenced on the 5th February 1884, and it is hoped that it may be finished in time for this year's irrigation. Shokatwah may hereafter be extended down to Jandwala, by taking it on along the side of the upper *danda*.

SHOKATWAH.

Translation of agreement between the Nawáb of Mamdot on one side, and the *Ábnoshes* of Shokatwah (in the Fázilka tahsíl) on the other.

Whereas the *ábnoshes* of Shokatwah have applied to the Nawáb of Mamdot to bring a canal to Fázilka tahsíl to irrigate their (*ábnoshes'*) lands, the parties concerned have agreed as follows:—

1st. That both the Nawáb of Mamdot and the said *ábnoshes* of Shokatwah will (with reference to this agreement) act exactly the same as is now done on the Mamdot canals (in the Ferozepore district).

2ndly. That the *ábnoshes* will apply every year for permission to take water, to the Nawáb of Mamdot.

3rdly. The irrigation will be carried on under the charge and direction of the Munsirim employed by the said Nawáb of Mamdot.

4thly. The said *ábnoshes* will make their own *kassís* or distributaries with pucca (masonry) heads.

5thly. The Nawáb of Mamdot will hold the proprietors of the village of *ábnoshes* responsible for the *ábiána*.

6thly. Every landholder will have a right to take water-cut or cuts through the land of his neighbour and *vice versâ*, and no one will have any right to object.

7thly. The said *ábnoshes* will pay to the said Nawáb the following rate of *ábiána* or water rate:—

When the canal passes through the lands of any village—

For flow-water, Re. 1 per acre.
For lift „ As. 8 do.

When the canal does not pass through the lands of any village—

For flow-water, Rs. 2 per acre.
For lift „ Re. 1 „

8thly. In addition to the above rates, the *ábnosh* will pay 6 pies per acre as the *patwárís* and *mírabs'* dues.

Note.—Besides the Nawáb of Mamdot, who signed one copy of the agreement, the following men of the *ábnoshes* of Shokatwah signed the other copy with the Nawáb:—

Ahmad Khán, Lambardár, Mauza Haud Khás.
Charágh Bodla, Lambardár, Mauza Chak Haud.
Rám Singh, Lambardár, Kiráyáwála.
Bághali Bodla, Lambardár, Ahál, *alias* Jhoke.
Sheikh Subhán, Lambardár, Halímwála Chak.
Burhán Dín, Lambardár, Depolána.
Fateh Singh, Lambardár, Theh Kalandar.
Ahmad Khán, Lambardár, Pharwánwála.
Burhán Dín, son of Ganj Bakhsh, Lambardár, Chak Banwála,
Lambardár Jauray Jhand.
Lambardár Patti.
Lambardár Abhún.

List of Irrigators and Government Officials to whom Khillats were given at Sirsa in the Jalsa held on the 10th April 1884.

(*a*).—IRRIGATORS, 1 TO 63, Rs. 1,004.

No.	Name.	Amount.	No.	Name.	Amount.
		Rs.			Rs.
1	Sheikh Samán ...	30	27	Noula ...	15
2	Ahmed Khán ...	30	28	Rugnáth ... } Lambardárs.	15
3	Sheikh Burhán-ud-din ...	30	29	Basáwa Singh ...	15
4	Tilok Chand ...	30	30	Sadda ..	15
5	Bhána Singh ...	30	31	Jowáhir Singh, Biswadár ...	15
6	Dyál Singh ...	30	32	Kisa, Do. ...	15
7	Bahádur Khán ... } Lambardárs.	30	33	Attu Singh, Lambardár ...	15
8	Jagge Khán ...	25	34	Sardár Ali Shah, Do. ...	75
9	Bágh Ali ...	25	35	Sheo Sahái, Biswadár ...	15
10	Kastúr Chand ...	25	36	Asa Rám, Lambardár ...	15
11	Gobind Singh ...	25	37	Burhán-ud-din, Biswadár ...	15
12	Núr Ahmed ...	25	38	Mokím Khán ...	12
13	Muhammad Hyát, Biswadár ...	25	39	Pír Khán ... ... } Lambardárs.	12
14	Alla Jowáya, Do. ...	25	40	Rahím Khán ...	12
15	Sewa Rám ...	15	41	Sháh Muhammad, Biswadár ...	12
16	Ranwat ... } Lambardárs.	15	42	Ali Muhammad, Do. ...	12
17	Púran ...	15	43	Khair Muhammad, Lambardár,	12
18	Lachhu ...	15	44	Alla Jowáya, Do. ...	12
19	Sheoji, Biswadár ...	15	45	Núr Ahmed, Biswadár ...	12
20	Dúla, Lambardár ...	15	46	Lakha, Do. ...	12
21	Khamána, Do. ...	15	47	Kherta, Lambardár ...	12
22	Dúraj, Biswadár ...	15	48	Rám Sukh, Záildár ...	12
23	Jáisa, Lambardár ...	15	49	Sakandar ...	12
24	Tulsa, Biswadár ...	15	50	Jamál-ud-dín ... } Lambardárs.	12
25	Jetha, Lambardár ...	15	51	Piár Singh ...	12
26	Jáisha, Biswadár ...	15	52	Charágh Ali ...	10

List of Irrigators and Government officials, to whom Khillats were given, &c.—(concluded).
(*a.*)—IRRIGATORS 1 TO 63, Rs. 1,004—(*concluded*).

No.	Name.		Amount.	No.	Name.	Amount.
			Rs.			Rs.
53	Alla Jowáya ...	Lambardárs.	10	59	Khema, Biswadár ...	8
54	Ahmed Khán ...		10	60	Machhi, Lambardár ...	8
55	Lakha ...		10	61	Jagga Singh, Biswadár ...	8
56	Rám Singh ...		10	62	Jodha, Lambardár ...	8
57	Jagráj Singh ...		8	63	Charágh Ali, Do. ...	8
58	Mamúra ...		8		Total ...	1,004

(*b.*)—GOVERNMENT OFFICIALS, 1 TO 26, Rs. 943.

No.	Name.	Amount.	No.	Name.		Amount.
1	Basant Lál, Tahsíldár ...	300	14	Zálim Singh ...	Chaprassis.	8
2	Gholám Mohay-ud-dín Khán, Assistant Superintendent, Settlement Department.	200	15	Mahbúb Ali ...		5
			16	Bála Singh ...		5
3	Roshan Dás, Overseer ...	100	17	Debí Sahái ...		5
4	Omesh Chand, Reader, Settlement Department.	50	18	Shatáb Khán ...		5
5	Muhammad Sadíq, Munserim,	50	19	Manji Singh ...		5
6	Gurditta Mal, Tahsíl Moharrir,	15	20	Gámeh Khán ...		5
7	Farzand Ali, Moharrir of Assistant Superintendent, Settlement Department.	10	21	Boland Khán ...		5
8	Doárka Pershád, Kanúngo ...	10	22	Umar Khán ...		5
9	Khushi Muhammad, Munserim,	100	23	Nizám Khán ...		5
10	Nathe Khán, Mistri ...	10	24	Baldewa ...		5
11	Kamr-ud-dín, Gunyasáz ...	10	25	Moula Bakhsh ...		5
12	Barkhurdár, Do. ...	10	26	Jaswanta, Cháukidár ...		5
13	Hunwant Singh, Chaprássi ...	10		Total ...		943

MISCELLANEOUS.

Cost incurred in getting sanads, &c., prepared ...	53
Grand Total as sanctioned by Government ...	2,000

A.

Agreement between Nawáb Nizám-ud-dín Khán of Mamdot and the irrigators of Tahsíl Fázilka, for joint use of the water of Mubarakwah Canal.

WHEREAS the Nawáb of Mamdot has given over for the use of the Mubárakwah his canal named Buggawah, on the conditions recited in Deputy Commissioner Ferozepore's No. 63 of 2nd March 1883, *viz.*, that the water level shall be maintained and that the irrigation in the Mamdot estate shall not suffer, he is entitled to draw from the Mubárakwah, water for all lands hitherto irrigated from the Buggawah.

2. Whereas the construction of embankments between the 6th and 9th miles of the Mubárakwah (being the same miles of the late Buggawah) will, by raising the water level in those miles, permit of some extension of the above irrigation, and the Nawáb of the Mamdot has, on that score, contributed Rs. 1,000 to the construction of the Mubárakwah, the Nawáb is entitled to the enjoyment of that improvement.

3. Whereas the physical conditions existing render it impossible that the Nawáb's lands should obtain more water from the Mubárakwah than is fairly represented by the two contributions made to that canal by him as above stated; therefore, in order to simplify matters, it is agreed between the Nawáb and the other irrigators, that the former shall take from the canal, in its course through his estates, all the water that he can draw therefrom for such lands as belong to him personally, and are held on lease by tenants of his. But occupancy tenants and subordinate proprietors of the Mamdot estate, or land-owners of the Mamdot estate, other than the Nawáb himself, shall have no claim to water, unless (1) they are shareholders in the canal, or (2) the canal traverses land in their possession in holding. In the latter case, in accordance with the custom prevailing in the Ferozepore canal system, the actual owners or holders of land so traversed are entitled to free irrigation of their own individual holdings only.

4. Irrigation in the above paragraphs means irrigation by lift or flow only. The use of chhabs or dams is debarred under paragraph 13 of the Ferozepore canal wajíb-ul-arz.

5. Should any dispute ever arise under the terms of the agreement, the decision of the Commissioner of the Division in which the Ferozepore district is comprised will be final.

No. 125, dated Lahore 4th February 1885.

From—R. G. THOMSON, Esquire, Senior Secretary to Financial Commissioner, Punjab,

To—The Offg. Junior Secretary to Government, Punjab.

WITH reference to paragraph 9 of your letter No. 24 of 7th July last, on the subject of the Fázilka Canals, I am now directed to submit, for the information of Government, a copy of the papers noted on the margin, which contain further information as to the origin, progress and management of the Shokatwah Canal.

1. Commissioner, Jullundur's No. 268 of 1st December, paragraph 6.
2. Deputy Commissioner, Sírsa's No. 363 of 15th October 1884, paragraph 6, with a copy of the statement therein referred to.

2. I am also to forward a copy of a note recorded by Lieutenant-Colonel Wace, the Second Financial Commissioner, in which will be found an account of the state in which the Shokatwah now lies, and of the terms upon which the Financial Commissioner recommends that it be completed and worked.

3. A sketch map of the Shokatwah is submitted for convenience of reference.

4. I am to ask for very early orders on Colonel Wace's proposals, so that the Shokatwah may be completed in time for the irrigation of the coming kharíf season.

Note by Lieutenant-Colonel E. G. WACE, Second Financial Commissioner, Punjab, on the Shokatwah Canal of tahsil Fazilka (para. 9 of Punjab Government No. 24, dated 7th July 1884).

I HAVE to-day discussed with Extra Assistant Commissioner Maya Das, who is in charge of the Ferozepore Canals, and with a motibar of the Nawáb of Mamdot, the position and prospects of the Shokatwah Canal; these officials having been sent to me by the Commissioner of the Division at my request.

The Extra Assistant Commissioner has brought with him a map of the villages affected, showing the course of the canal, village boundaries, and in which villages the Nawáb of Mamdot is interested as jágírdár. He has also brought an area table of the villages in tahsíl Fázilka which will be irrigated by the canal.

I understand that the Shokatwah canal has been completed as far as the boundary of tahsíl Fázilka; that it has been aligned for eight miles further up to mouza Banwala through the villages of ilaka Bihak, in which the Nawáb has a jágír share; and that its further extension, eight miles to Kalid Shah, on the south-west border of tahsíl Fázilka has not been aligned. All further work on the Canal is stopped, pending final orders by Government on this reference; nor is the canal at present in a condition in which it can irrigate any village in tahsíl

Fázilka. But the Panjewah having been enlarged, and the Shokatwah having been completed up to the Fázilka tahsíl boundary, four-fifths of the expenditure necessary to the Fázilka irrigation has been incurred; and none of this expenditure was called for in the interests of the Nawáb's ilaka of Mamdot, for his own villages could have been irrigated by the Nizámwah.

As planned and laid out down to Chak Banwála, the canal will irrigate—

(a) some 15 of the Nawáb's own villages in the south of tahsíl Ferozepore, in respect of which, as the Nawáb owns these villages or the greater part of them, no difficult questions arise;

(b) some 16 villages of tahsíl Fázilka, in which eleven-sixteenths of the revenue is jágír, the Nawáb taking eight-sixteenths;

(c) four villages of tahsíl Fázilka, which are not jágír;

and if extended to Kalúl Shah it will also irrigate—

(d) nine more villages, of which also the revenue is not held in jágír.

The Nawáb, who has constructed the canal, has no rights of ownership in any of the Fázilka villages (*b*, *c* and *d* above). The area which will probably be irrigated in these villages is approximately—

	Acres.
In group *b*	5,000
In group *c*	1,500
In group *d*	3,500
Total ...	10,000

The point in respect of which the Shokatwah differs from all the other Ferozepore irrigation canals, and also from the Mubarakwah and Fázilwah recently constructed in tahsíl Fázilka, is this, that all these other canals have been constructed by the owners of the villages which they irrigate; whereas the Nawáb of Mamdot, who has constructed the Shokatwah Canal, does not own any of the lands which will be irrigated by this canal in tahsíl Fázilka.

To this general statement there is one exception. The canals in ilaka Mamdot have been constructed at the sole expense of the Nawáb. He is sole jágírdár of ilaka Mamdot, and he is also owner of the greater part of the iláka; but there is a considerable area of which he is not owner.

The ábiána rates levied by the Nawáb in iláka Mamdot are—

Class of land.	Rate of ábiána for flow-supply per acre.	Remarks.
Land owned by the Nawáb. ...	8 annas	This land is also charged a fixed land revenue of Re. 1-4 per acre.
Land not owned by the Nawáb in villages through which the canal passes.	Re. 1.	The fixed land revenue is very light, to 5 annas per acre. The village suppli land for the canal free.
Land not owned by the Nawáb in villages through which the canal does not pass.	Rs. 2.	Fixed land revenue is as in the preceding class.

Lift irrigation pays half these rates. Practically then the Nawáb's agreement with the Shokatwah villages in tahsíl Fázilka, to which Government sanction is now desired, extends to these villages in tahsíl Fázilka the system now in force in the Mamdot jágír in villages not owned by the Nawáb, but irrigated by his canals.

Seeing that these rates are already in force in the Mamdot jágír, and that they have been accepted by the Shokatwah villages as the basis of their dealings with the Nawáb, I do not think Government sanction to the rates need be withheld, provided the relation in which the Nawáb will stand to these villages is clearly defined.

To this end I have formulated the following terms; and the Nawáb's agent has expressed his assent to them:—

(*i*) That the ábiána charged on the Shokatwah on lands not owned by the Nawáb shall be held to be a water-rate assessed under Section 36 of the Northern India Canal Act, 1873; that it shall stand

for the present at the rates agreed on between the Nawáb and the irrigating owners; but that it shall be open to Government to vary the rate on the same grounds as would apply to any rate assessed under that Act.

(*ii*) That the entire water-rate leviable on this canal, whether under Section 36 or 37 of the said Canal Act, be assigned to the Nawab on the following conditions :—

1st condition.—That the Shokatwah canal shall be managed in respect both of maintenance and of distribution of water by the Canal authorities of the Ferozepore district; the Shokatwah receiving not less than half the water which the enlarged channel of the Panjewah will carry.

2nd condition.—That the cost of maintenance and necessary repairs shall be a first charge on the ábiána.

3rd condition.—That the ábiána due from villages of tahsíl Fázilka shall be collected by the Tahsíldár of Fázilka.

4th condition.—That the capital cost of the canal up to mauza Banwala be taken to be Rs. 22,000, and of the extension to Kalúl Shah Rs. 6,000.

5th condition.—That the assignment of the ábiána of Shokatwah to the Nawáb be for the term of the current settlement, and thereafter, until such time as the Government repay to the Nawáb the said capital cost.

6th condition.—That the repayment of the capital cost, as above contemplated, shall terminate the Nawáb's interest in the canal, and entitle Government to maintain it as an irrigating work, taking the supply out of the Panjewah; but Government will continue to pay a fair share of the cost of clearing and keeping open the Panjewah.

7th condition.—That the Nawáb shall not be charged with the cost of the making or repairing of village distributaries.

8th condition.—That when Government has acquired the Shokatwah canal under the 5th condition, no higher rate of ábiána shall be charged on land watered by that canal in tahsíl Fázilka than is actually for the time due to Government on land watered from the Nizámwah.

(The reason of this is that, for the purpose of watering the Mamdot villages, it was not necessary to make the Shokatwah. These Mamdot villages could have had water from the Nawáb's Nizámwah; and the Nawáb, therefore, should not be charged on these lands more than he may be required at the time to pay for Nizámwah irrigation.)

9th condition.—That if it be proposed at any time, before the Nawab's interest in the canal ceases, to enlarge the canal beyond the size now contemplated (which provides a discharge of 250 cubic feet per second at the place where it takes out from the Punjewah), such enlargement will not be sanctioned by Government without a reconsideration of the terms of this grant.

The case can now be submitted to Government for sanction to the above proposed terms. I do not feel able to speak with confidence as to the profit which the Nawáb will reap from them.

The Mamdot villages could have been irrigated from the Nizámwah; and the Nawáb is a gainer, therefore, only in respect of the receipts from the Fázilka villages. After three or four years he will perhaps secure from these villages a gross income of from Rs. 6,000 to Rs. 8,000. The maintenance charges will not be less than 8 annas per acre irrigated—perhaps 12 annas will be nearer the mark; for all the clearances will be at the Nawáb's expense: and if difficulties arise in connection with the Panjewah head, there will be other expenditure to meet. Granting that the terms are liberal, I do not think the venture is at all free from risk, and much will depend on good management, both of the canal works and of the dealings with the irrigators.

List of villages which the Shokatwah Canal will irrigate in Tahsíl Fázilka.

1	2	3	4	5	6	7	8	9	10
Serial number of village.	JÁGÍR AND SHARED VILLAGES.				KHALSA VILLAGES.				REMARKS.
	Name of village.	Area in Bíghas.			Name of village.	Area in Bíghas.			
		Total area of village.	Area now cultivated	Area which will probably be irrigated.		Total area of village.	Area now cultivated.	Area which will probably be irrigated.	
1	Houz Khás ...	3,080	1,648	230	......	...	...	...	
2	Houz, *alias* Gúndri ...	2,307	1,472	1,120	......	...	...	...	
3	Karyánwála ...	2,377	746	320	......	...	...	...	
4	Trobree ...	3,936	897	220	......	...	...	...	
5	Ahal, *alias* Jhok ...	2,425	820	1,120	......	...	...	...	
6	Jowra Jund ...	1,944	1,107	80	......	...	...	...	
7	Pukkhiwáli ...	1,981	566	80	......	...	...	...	These 16 villages of jágír are shared as follows:— 1. The Nawáb of Mamdot, 12 annas to a rupee, *i.e.*, 4 annas Government, 8 annas Nawáb. 2. Bhái Jasmer Singh, 2 annas to a rupee. 3. Bhái Zabar Jang Singh, &c., 1 anna do. 4. Sheikh Subhan, &c., 1 anna do.
8	Chak Jourke ...	2,162	831	220	......	...	...	...	
9	Ojánwáli ...	2,120	440	1,120	......	...	...	...	
10	Dippolána ...	2,388	415	1,120	......	...	...	...	
11	Thai Kalundur ...	1,977	693	480	......	...	...	...	
12	Sháma Khánkah ...	2,503	983	480	......	...	...	...	
13	Chak Banwála ...	2,368	559	1,120	......	...	...	...	
14	Chak Keswála ...	2,285	886	80	......	...	...	...	
15	Chak Dibwála ...	2,419	696	320	......	...	...	...	
16	Chahlánwalí ...	2,895	1,272	80	......	...	...	...	

17	......	...	...	...	Taliwála, *alias* Odián ...	1,786	1,178	,120	
18	......	...	...	...	Obhun ...	4,951	1,598	480	
19	......	...	...	...	Jorke ...	3,485	1,529	320	
20	......	...	...	...	Banwála ...	1,313	792	480	For the present Shokatwah will irrigate down to this village.
	Total ...	39,167	14,031	8,190	Total ...	11,545	5,097	2,400	
					Kourawáli ...	3,409	1,432	480	It has been designed that by and by the tail of this canal will be carried on to all these (9) villages. All the villages named in this statement have agreed by a registered deed to take water on certain terms.
					Choháráwáli ...	2,695	1,897	800	
					Kikarwála ...	2,867	1,111	320	
					Beganwáli ...	4,281	2,362	960	
					Hiránwáli ...	2,870	1,486	1,120	
					Qabul Sháh ...	6,577	3,212	1,120	
					Shajrána ...	5,553	1,366	220	
					Singhpura ...	2,555	1,222	320	
					Khere Khera ...	5,088	2,371	160	
					Total ...	36,197	16,459	5,500	

(Sd). MAYA DAS,

Extra Assistant Commissioner,

In charge of Ferozepore Inundation Canals.

No. 11, dated Lahore, 6th March 1885.

From—H. C. Fanshawe, Esquire, Offg. Junior Secretary to Government, Punjab,
To—The Senior Secretary to Financial Commissioner, Punjab.

I am directed to acknowledge the receipt of your letter No. 125 of the 4th ultimo, regarding the Shokatwah canal which was designed by Colonel Grey for the irrigation of certain villages in the Fázilka tahsíl of the late Sirsa district, and in reply to convey the following orders.

2. From the communication now under acknowledgment, it appears that work was not actually commenced upon this canal last year, as was understood to have been the case when my letter No. 24, of 7th July, was written, and that actual operations were confined to the widening of the Punjewah canal to provide a sufficient supply of water for the Shokatwáh tail, when that is excavated. It appears, however, that, but for the proposed construction of a new tail, the Punjewah would not have been widened; and the Financial Commissioner is of opinion that, as this widening has been permitted, Government cannot in fairness to the Nawáb refuse permission to the excavation of the actual Shokatwáh. In this view the Lieutenant-Governor concurs, although he is disposed to consider that there are many general disadvantages connected with the extension of canal irrigation by means of works constructed by persons who necessarily assume the position of middlemen towards the owners of the lands irrigated. In the present case Government has been committed to a premature decision by the action of Colonel Grey in encouraging the widening of the Punjewah solely, as explained by the Financial Commissioner, with the object of constructing the Shokatwah. It is very undesirable that this should ever be so, and the Lieutenant-Governor is obliged to say that, though the facts of the case are somewhat different from what they were originally supposed to be, the restriction contained in paragraph 11 of my letter of 7th July last must be considered to remain in full force.

3. Work may, therefore, be commenced upon the Shokatwah canal, provided the Nawáb of Mamdot is prepared to abide by the following amendments in the conditions which are proposed by the Financial Commissioner, and which, it is understood, have been accepted by the Nawáb. These conditions seem to the Lieutenant-Governor to be generally appropriate, except in the case of the *latter* half, *condition* No. 7, which appears to be based on a misapprehension, and which His *Honor* is *altogether* unable to accept. There is no intention on the part of Government to *purchase* the inundation canals which have been constructed in the Ferozepore district. This question was carefully considered when the canals were first constructed, and when, as regards the canals outside the Mamdot estate, it was proposed by Colonel Grey that they should belong to Government *without payment* on the expiry of the present settlement in consideration of Government charging no water-rates for the use of the water of the River Sutlej during that period, and it was decided that it was not desirable that Government should acquire these properties. It was never proposed, however, either that the villages or the Nawáb should continue to enjoy the water of the river free of payment in perpetuity, and, as stated in paragraph 10 of my letter No. 24, of 7th July 1884, Government intends to demand a royalty or water-rate for irrigation from these canals, on the expiry of the period for which exemption from payment has been sanctioned. The words "and thereafter, until such time as the Government repay to the Nawáb the said capital cost" must, therefore, be removed from the 5th condition, and the Nawáb must be given clearly to understand that the conditions now approved will remain in force only during the currency of the present settlement of the villages to be irrigated by the Shokatwáh, and that at the end of this period the Government will revise the conditions as may then seem best, and will certainly demand a share of the water-rates, which till then will be enjoyed solely by the Nawáb. The alteration of this condition will necessitate a revision of conditions 6 and 8 also, and will practically remove the necessity of the latter. It is understood that the concession contained in this condition was intended to apply only to such lands as are owned by the Nawáb himself.

4. It will be necessary that the revised conditions should be fully explained to the Nawáb, and that he should formally accept them before the excavation of the Shokatwáh is actually put in hand.

II.—*Panjewah Canal.*

1. Half a mile north of the village of Bahádarki, an arm of the river named after that village, leaves the main stream, which it rejoins near Middah some 12 miles from its head. Nearly six miles distant from the mouth, and close to the village of Megah Panjigaraian, the Panjewah canal is taken out of this branch. So called from the village of Panjaka, it sweeps south-east to below that village, and describes a rough semi-circle down to the villages of Nuraka and Sowaiah Máhtam. The canal follows an old depression (down which flood-

Direction of canal.

water used always to come for a short distance,) through an excavated bed for $3\frac{1}{4}$ miles, which was constructed last year, and this year deepened and widened. It then falls into the huge depression bounded on the south by a high bank, on the north by gradually rising ground, and on the west by the great embankment uniting the two. The total length of the embankment from Nuraka to Sowaiah Máhtam is about one and a half mile and the cubic contents of it are about 513,949 feet. Last year two channels, the Nukrá and Nurawah, were taken out through the high southern bank, leading to the Amír Dhand: this year only the more westerly, called the Nurawah, has been widened and deepened. It leaves the depression a little to the east of the village of Nuraka, and runs due south past Duláka and Bádalka to the Amír Dhand. Down this huge depression the canal water tumbles for two miles, and is then stopped at the Middah bund, built last year. About one-third of a mile below Amír Khás, the actual canal leaves on the left bank in a natural channel known locally as the "Wanji," which it deserts after half a mile for another which goes out on the left bank, and is called the "Pír Bakhsh Chauhan." The canal now follows the line of the Fázilka road for about a mile, finally crosses it opposite the village of Khánawálah, and falls into the Nawáb's *chaks*. In heavy flood time water goes on down the Wanji beyond the point where the canal leaves it, and it is finally stayed on the Dhandi bund, which also was constructed last year. The total length of the actual canal is ten and a half miles; that of the Nukra one and a half mile; that of the Dhand Amír two and one-eighth miles; and of the Wanji beyond the actual canal's course, two and one-fourth miles, giving a total length of sixteen and three-eighth miles of water-course to the canal.

2. The mouth of the canal is 40 feet broad, and the slope ·50: the discharge

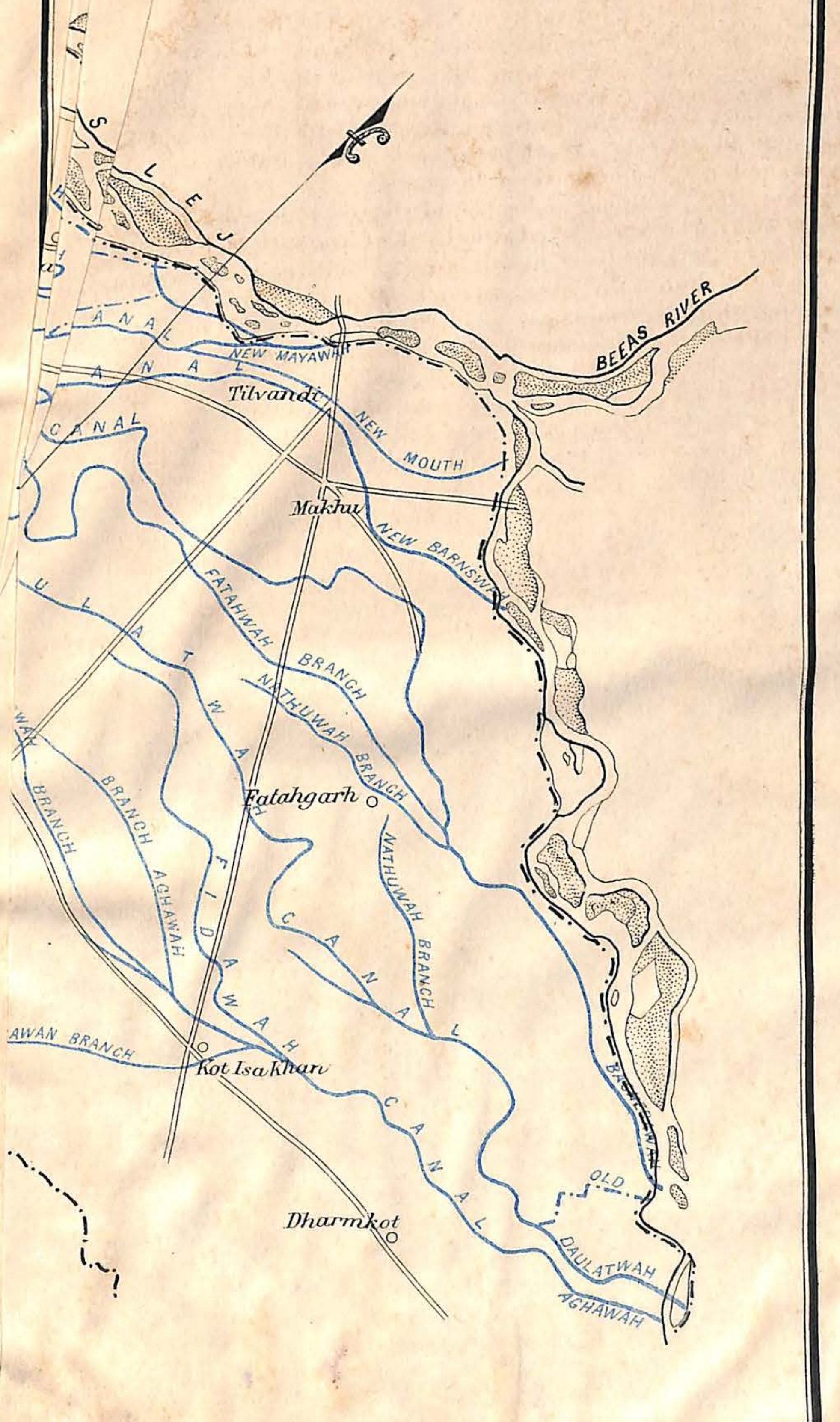
Dimensions, &c.

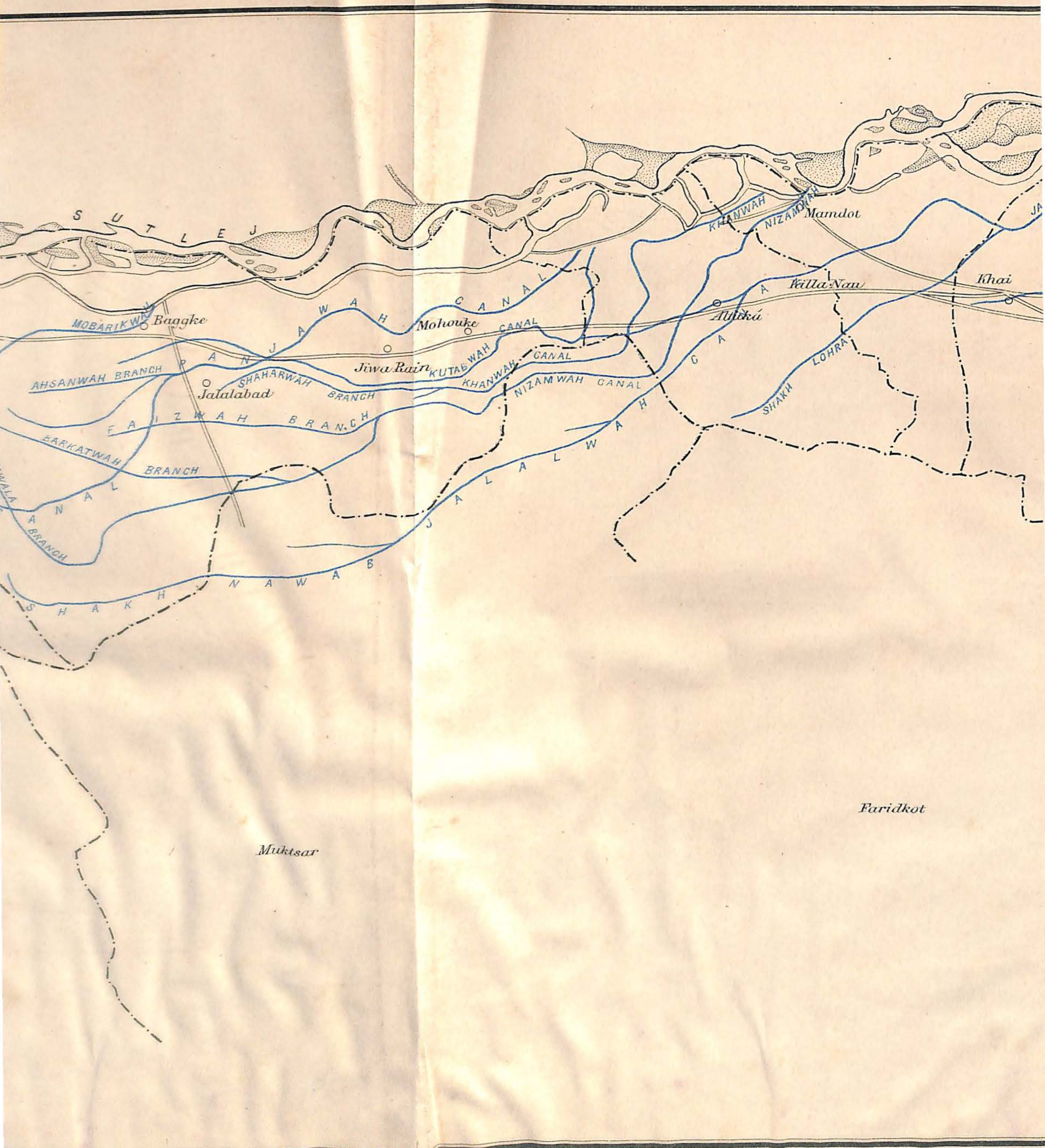
is 300 cubic feet per second, and the head of water $5\frac{1}{2}$ feet deep. The first *duks* consisted of pure river sand deposited last year, and entailed very laborious work in clearing them. After $1\frac{1}{2}$ miles from mouth the work consisted in giving the same depth to the sides as the natural channel possessed in the middle of its bed: on the $3\frac{1}{4}$ mile, work ceased entirely. The embankment to Sowaiah Máhtam made last year was carefully repaired and newly revetted. At four miles the Nukra leaves the canal with a bottom breadth of 15 feet, a slope of one foot per mile and a discharge of 80 cubic feet per second. The Nurawah leaves at the $4\frac{1}{4}$th mile, with a bottom breadth of 30 feet, a slope of ·75, and a discharge of 180 cubic feet per second. The breadth is gradually reduced to 24 feet where the canal falls into the Amir Dhand, after a course of seven miles from its head. Except on the early *duks*, it was not found necessary to increase the breadth of the Nurawah this year, but the depth was increased nearly $2\frac{1}{2}$ feet on an average down its whole length; the total excavation done on it in this year being 12,87,767 cubic feet. The Wanji channel has a breadth of 16 feet and a slope of 1·00, drawing 120 cubic feet of water per second. The Pír Bakhsh branch draws 100 cubic feet, and continues at the same slope for half a mile, after which the slope is reduced to ·50, and the breadth increased to 23 feet. The excavation is very shallow, and strong embankments are made on either side to protect the high road from being flooded. The total work of excavation done last year on the canal was 141,966 cubic feet, and in this year, including Chímbah mouth, mentioned hereafter, 2,567,618 cubic feet. The Middah bund is 390 feet long, and contains 66,690 cubic feet of earth, and the Dandi bund 200 feet long, with an area of 135,000. In the middle of the Sowaiah Máhtam *pasél* two large bunds, in two deep depressions, exist—hence the amount of earthwork in the embankment. The total cubic contents of the bunds on this canal are thus 738,914 cubic feet.

3. The Panjewah canal was only opened on the 18th of July, although work on it commenced in April. The reasons of delay were many. For a whole month work was stopped, to enable the people to cut and house the harvest. Every village had been at work on the Nizámwah and they were tired somewhat. The weather was unusually hot, and work at mid-day was impossible; while the extraordinary frequency and severity of dust storms in the evening hindered or prevented work in the cooler hours. A thousand rupees was originally given in aid to the canal, to which afterwards 55 rupees more were added. But even with this aid the works fell very heavy on some villages, especially Panjíka and Nuraha. The former received 125 rupees in aid, all of which had to be diverted to hire labour to help them. The amount of land irrigated will, however, richly repay all trouble. The canal was first under the Naib-Sheríff Abdul Rahman, who was in charge last year also. He fell ill in June, and the Excise Dárogha, together with the present Kanúngo of Moga, were put in charge. Work progressed slowly, but it was very well done in the end, and creditable to those in charge. The Nawáb did his share of the work on the tail. The total number (56) of villages engaged, comprised *ghair ábnosh* 25 and *ábnosh* 31, who were looked after by three patwárís and nine chaprasís. When the canal was nearly ready, it was discovered that the head of water which at last came down the arm of the river, was not sufficient to enter the canal, the head of the Dhand having become heavily silted during 1874. In consequence a new head was excavated for one and a half miles near Chímbháwálah, being taken out of the actual river. It has a discharge of 300 cubic feet per second, a breadth of 30 feet and a slope of. 50 : the total excavation on it was 339,827 cubic feet, and cost Rs. 425, being paid for in full. This head was kept closed on completion, in hopes that a heavy flood might yet clear the head of the Bahádarkí branch and prove sufficient to supply the canal. But when these hopes proved illusory, the new mouth was opened, and an ample supply of water for the canal was thus obtained. The new mouth joins the Báhadarkí *phat* about two miles from the mouth of the arm. Irrigation arrangements on the canal are being developed. It was proposed to construct two sluices in the Sowaiah Máhtam *pasél*, but the idea had to be given up for this season; they will, however, be constructed during this cold weather.

Work, &c.

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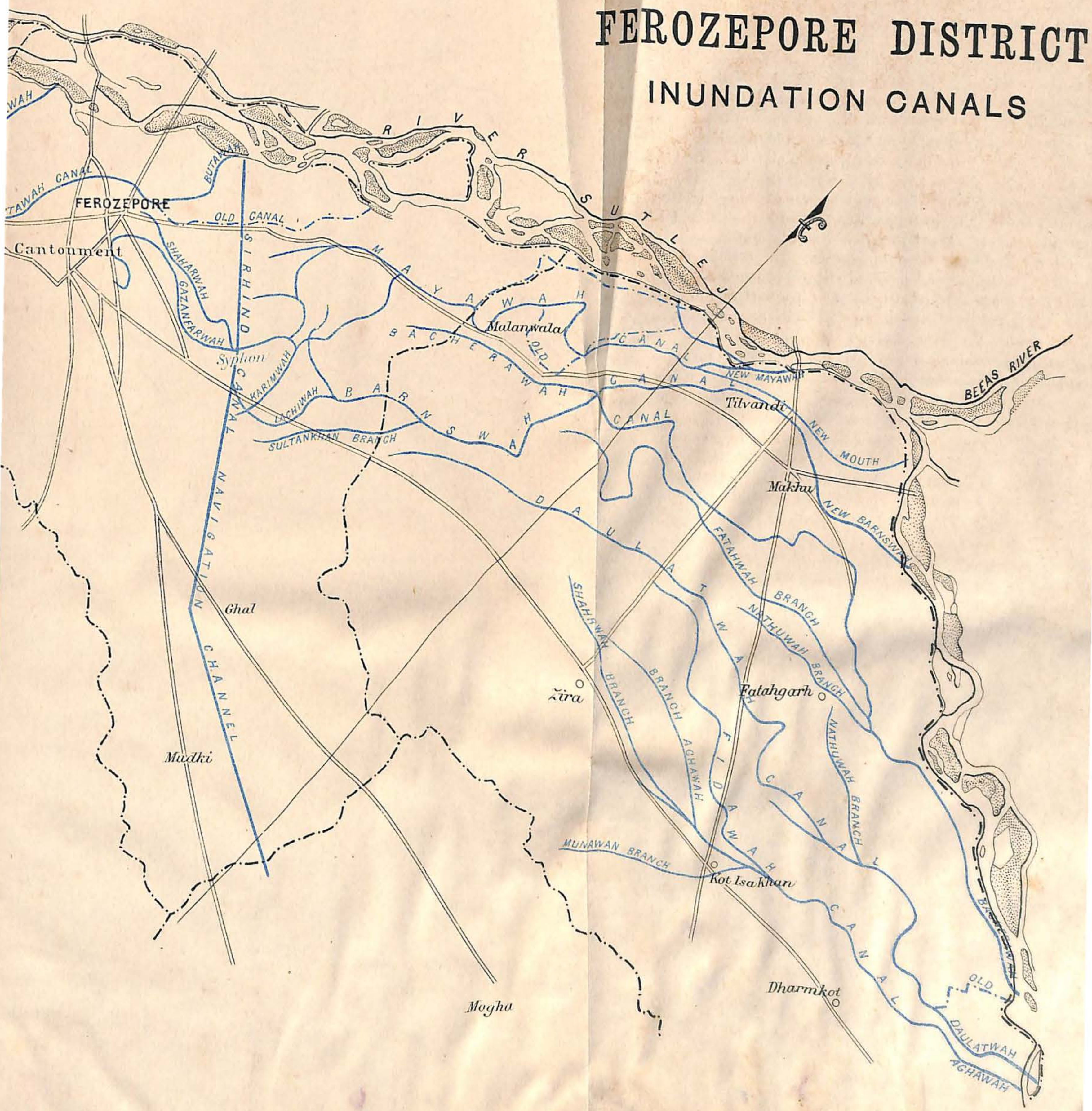




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